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THE GULF PUBLISHING COMPANY

The OIL WEEKLY and The COMPOSITE CATALOG for the drilling-producing-pipeline industry

PETROLEUM REFINER and The REFINERY CATALOG for the refining-natural gasoline industry

LOOKING AHEAD
. . . with the Editor

THE second of THE OIL WEEKLY's once-a-month special treatment of international oil affairs, instituted November 5, will appear in the December 3 number.

In presenting a Monthly International Section, the editors recognize that what happens in global oil development constitutes in large measure the answer to what the future of the domestic industry will be for the next few years.

The December international section will feature a comprehensive picture of the petroleum industry in Venezuela, largest oil-producing nation in South America. Articles on this important territory will be presented by George O. Ives, foreign editor, who has just returned from a 2½ months inspection tour of South American oil fields.

Ives has a background of almost 20 years of association with the petroleum industry. More than ten years have been as a writer, during which he was concerned with all phases of the industry from engineering to economics.

During his tour of Venezuela, Ives contacted government officials and oil company personnel, both being very cooperative in furnishing information as to past, present, and future activities. His articles will include observations of all phases of field activity.

The Monthly International Section is presented in addition to all the regular features in the magazine, and will include articles on other foreign producing areas. This monthly feature brings up-to-date information on what is happening abroad.

The OIL WEEKLY

ENGINEERING « NEWS » STATISTICS

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The Outlook

A bitter fight is brewing between rival interests seeking the Big-Inch pipe lines for natural gas service, but it is more than possible the lines will never be sold because gas transmission and national security appear incompatible. Once tied in to important industries the lines could not be reconverted to oil in the event of an emergency without leaving those industries bereft of fuel for war production.

* * * *

Congress, growing restive over the slowness with which the labor-management conference is settling the industrial controversy problem, may speed things up by considering stiff legislation controlling union activities, serving notice on labor that it must make concessions if it is to escape government regulation.

* * * *

Plans of administration leaders to keep Congress in session until President Truman's "must" program is enacted will not serve to put through all the measures he has asked. He will get a full-employment bill—but far from what he seeks, but will not get increased unemployment compensation, and his most recent proposal for government medical care will be bitterly fought.

* * * *

Members of Congress, recently returned from Europe, are gravely concerned over Russian domination of adjoining countries and will demand free-trade clauses in any agreements made for loans to those countries. Unwillingness of the Soviet to allow free entry of our movies, permit our planes to fly over established routes or even give visas in adequate quantities, even to our diplomatic representatives, is cited as an example of the difficulties of developing economic cooperation with the U.S.S.R.

* * * *

Scientists of the future will become less and less an adjunct of a routine manufacturing setup. Instead, companies will tend to become organized around the concept of continuous development of new and better products, derived from the activities of its pure and applied scientists, engineers and sales development force.

* * * *

Congress in 1946 will vote large sums to subsidize science, but members are worrying over how to prevent government-directed research from upsetting the patent system.

* * * *

Oil companies plan important capital expenditures on retail facilities. Sun Oil Company, for example, will spend some $10 million in expanding its retail outlets, starting with construction of 400 filling stations within the next 12 months.

* * * *

Deeper drilling and increased gas-condensate discoveries will force oil companies to devote more attention to natural gas. Gas cycling plants and pressure-maintenance operations will be placed under special new departments by some companies.

* * * *

Automobile production in 1946 may not be equal to the 1941 figure (about 5 million cars) if strikes continue and raw material shortages persist. Manufacturers will have difficulty turning out 250,000 cars in 1945 compared with late-August estimates of 500,000 to 750,000 cars.

* * * *

Truman cabinet changes talked include: Ickes to be succeeded by Senator O'Mahoney, if he wants it. Ed Pauley to take Navy post in spring when Forrestal steps out. Schwellenbach to leave when a good judgeship shows up for him. Reconversion Chief Snyder to quit as soon as it can be arranged without embarrassing Truman.

How they turned Sucker Rods into "Tommy Guns" *and back!*

• One of the interesting production stories to come out of the war was caused by a shortage of the alloy steel specified for "Tommy Gun" barrels. As a substitute, metallurgists of United States Steel Corporation suggested carbon steel with a special heat treatment. The chief obstacle was that heat-treating facilities having sufficiently accurate controls were not generally available.

However, Oil Well Supply Company had a continuous furnace at Oil City which had been built for heat treating sucker rods. Metallurgists went to work. They tried many different heat treatments and perfected a process that proved highly successful.

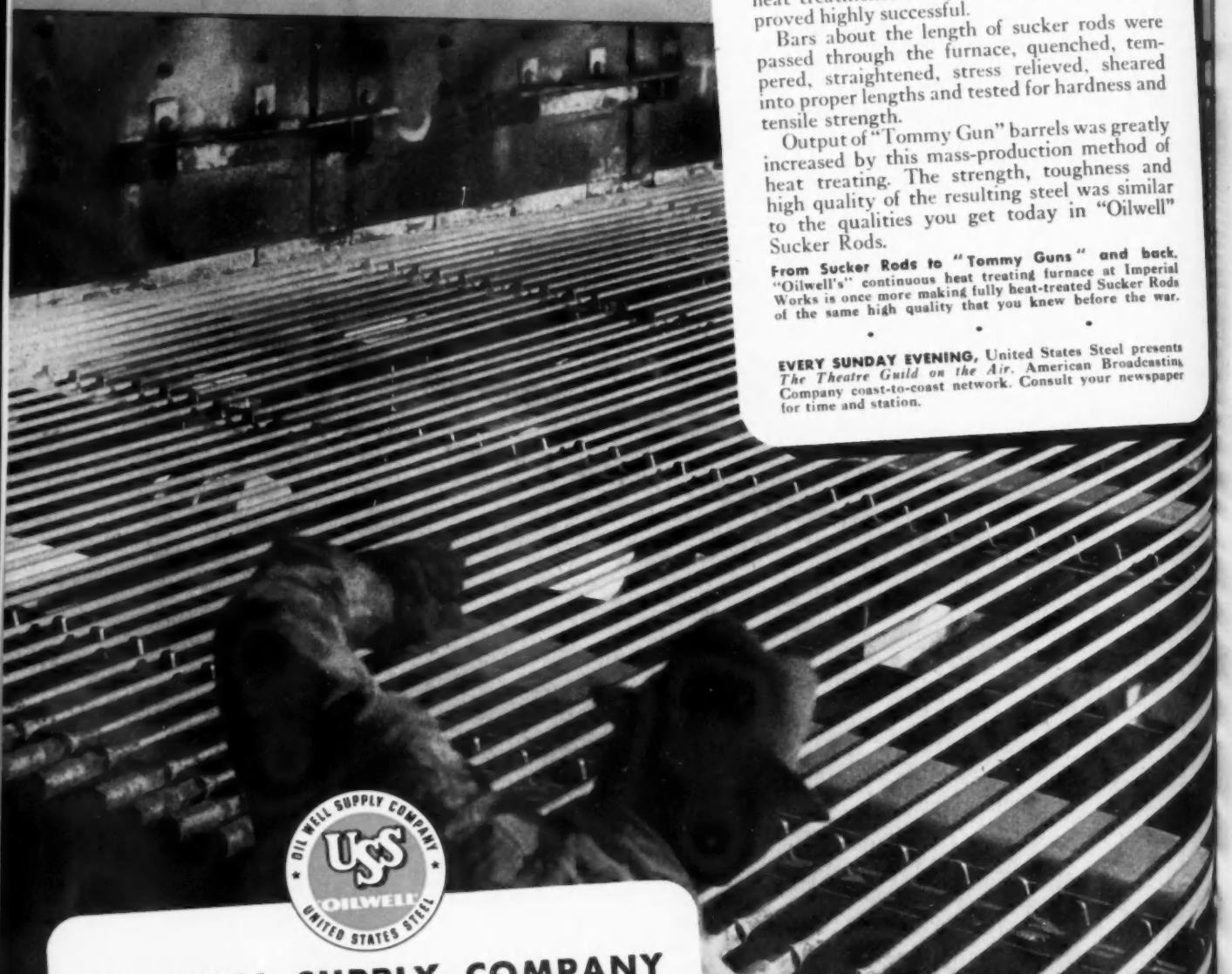
Bars about the length of sucker rods were passed through the furnace, quenched, tempered, straightened, stress relieved, sheared into proper lengths and tested for hardness and tensile strength.

Output of "Tommy Gun" barrels was greatly increased by this mass-production method of heat treating. The strength, toughness and high quality of the resulting steel was similar to the qualities you get today in "Oilwell" Sucker Rods.

From Sucker Rods to "Tommy Guns" and back. "Oilwell's" continuous heat treating furnace at Imperial Works is once more making fully heat-treated Sucker Rods of the same high quality that you knew before the war.

• • •

EVERY SUNDAY EVENING, United States Steel presents *The Theatre Guild on the Air.* American Broadcasting Company coast-to-coast network. Consult your newspaper for time and station.



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UNITED STATES STEEL

"OILWELL"

The Changing Panorama

Increasing Demand For Heavy Fuel Oil

ONE of the tasks that will confront the oil industry in the future is that of insuring the availability of adequate heavy fuel oil supplies to meet enlarged consumptive requirements.

Trends in refining technology indicate larger quantities of gasoline and distillate fuel will be manufactured in the future, and much less heavy residual fuel oil. New catalytic cracking processes characteristically produce more gasoline and distillate fuel and less heavy fuel oil from crude. Dr. Robert E. Wilson, chairman of the PIWC economic committee, has stated that installations of these new catalytic cracking units already total 60 percent of the nation's prewar thermal cracking capacity. As the older thermal cracking plants wear out, larger yields of light products will result from greater dependence on the newer more efficient processes.

This trend towards manufacture of a larger percentage of high price products is an encouraging picture of the industry financially. Neverthless, it behooves the industry also to insure the availability of adequate heavy fuel oils.

This trend will lead to a decreased supply of heavier fuel oils from domestic operations, when indications are that consumption will increase substantially. Unless this deficiency is made up from other sources, some fuel oil users will convert to coal. Thus, the industry would lose these markets. Among the large consumers of heavy fuel oil are the Navy and commercial shipping.

It would be unwise to dump higher valued crude into relatively low value fuel oil. Consequently, to meet this prospective deficit in heavy fuel oil supplies, full utilization of crudes especially suitable for this purpose must be made. There will still remain a deficit, according to indications, and undoubtedly this will have to be met by larger imports of heavy fuels or crudes that make heavy fuels.

In our gas-turbine aircraft engines we have the basis for future engines of as great as 10,000 horsepower. Research and engineering alone will determine the limit of their development, but the horizons appear to be limitless.

—HARRY A. WINNE,
Vice President of Engineering,
General Electric Company.

Expansion Plans for Interior Department

SECRETARY Harold L. Ickes is whipping into shape plans to make the Interior Department a more potent force in the field of petroleum.

The expansion of the Bureau of Mines is included in the plans which will bring it more definitely into operation as a laboratory for the development of techniques which will increase the percentage of recovery from waning reserves. Under the new plans, the bureau would work toward the perfection of methods of producing oil from shale, coal and other materials in view of the day when our natural petroleum resources may be insufficient.

Along the same line, the bureau proposes to send out technical experts to chart every existing reserve of oil, coal, minerals and metals, to develop a nation-wide record of our holdings in those commodities. It is anticipated that this would be done in cooperation with the Geological Survey, which has prepared a program for the making of topographical and geological maps of the entire country.

The expansion of the bureau's activities and diversions from war efforts to normal duties provides an ideal time for commencement of new studies such as comprehensive research programs on natural gas. The bureau can serve as a cooperative research study group for all interested parties, large and small.

The General Land Office also may come in for postwar expansion, to serve as the central recording agency for all public lands transfers, leases, etc. Plans also call for the streamlining of the leasing act and regulations, to encourage maximum private operation on the public lands.

The Petroleum Conservation Division will be more intimately connected with the daily life of the oil industry. Ickes proposes to make this an effective advisory body, possibly the Government "partner" of any organization which may grow out of current studies of putting the Petroleum Industry War Council into peacetime cooperative efforts of the industry.

Congress is expected to receive details of the over-all program next year, with a request for the authority and funds required to put it into effect.

Plug for California Oil Control Statute

ONE'S conclusion on whether there is going to be a state oil control law in California depend upon whom one talked to last.

Those who have always favored some form of State regulation have not changed; in fact they feel there is more chance of unity on the matter within the industry because PAW control of production during the war, while unpleasant at times, had its virtues from the standpoint of the individual California producer.

Neither do the opponents of state control appear to have changed their views, and apparently they intend to fight any new move to pass legislation. Most California oil men agree something should be done, but in the next breath they say there seems little likelihood of anything being done until the industry gets together on the issue.

Two previous attempts to pass a law failed because the industry was split on whether or not it wanted state regulation. The state is the only major producing area without a conservation law. As for voluntary control, as practiced before the war, it is no longer looked upon with much favor.

There is no critical overproduction in California now, as there was for many years prior to the war. As long as the West Coast industry is rocking along on a fairly even keel, an apathetic view of the whole matter likely will result. However, those who advocate some sort of conservation program point out that this situation could well change in a short time and that now is the time to plug for a program, either voluntary or legislative, preferably the latter because of the anti-trust implications of any voluntary arrangement. Too, the fact is not overlooked that with no conservation program, voluntary or otherwise, the state's oil industry is vulnerable to criticism and attack by Washington.

Plastics incorporated in the cabins of the new R-6 helicopter are half the weight of aluminum of similar thickness and were chosen for their great tensile strength and ability to withstand strains and excessive vibration. It seems quite likely that the unusual properties of allyl resins will be further utilized by the aircraft industry in the future.

—SHELL NEWS.

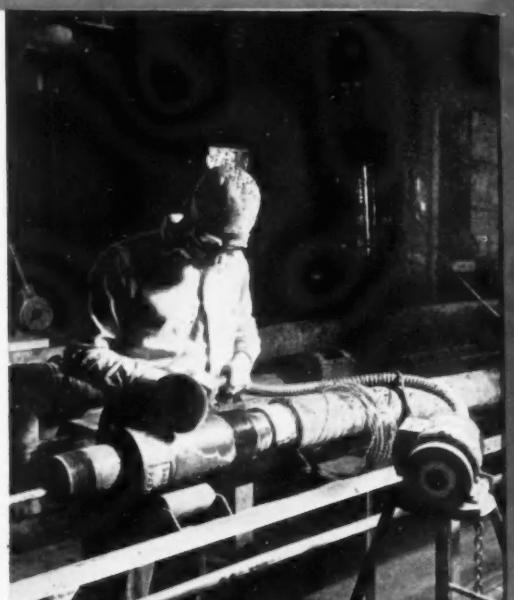
HOW TO MAKE YOUR GOODALL ROTARY HOSE LAST LONGER

(No. 6 of a Series)

Right: Showing the first stages of the repair job. The operator is buffing off all the old rubber and removing duck and wires. After coupling has been cleaned thoroughly the hose is cut behind the break; all pressure wires are cleaned and coupling is reinstalled. The same equipment and materials are used as when hose is manufactured.

Below: Showing the operator building a Barney Coupling back on Goodall Rotary Hose. Notice the reinforcing wires being applied from the body of the hose over the coupling. This is a protection against improper swivel hook-up.

Below, right: Illustrating the final operation of repair. This photo shows our Special End Vulcanizer curing the hose. The same cure is used in the repair shop as is used when the hose is first manufactured.



COMPLETED REPAIR JOB

Note the streamlined integral construction between Barney Coupling and Goodall Hose — a most important factor in preventing flexing or cutting at this juncture. **This is a typical Goodall End Repair.**

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FACTORY AT TRENTON, NEW JERSEY

The Week's News

A BITTER fight over the postwar use of the Big Inch pipe lines was in sight last week following submission to the Senate Special Petroleum Committee of outlines of three proposals for their acquisition as natural gas carriers. Last 1945 hearings of this group is scheduled for Wednesday. Page 30.

Toluene Plants Offered—Less controversial was a Surplus Property Administration report recommending prompt sale or lease of war-built toluene facilities and the scrapping for salvage of those that cannot be sold or leased, but with toluene production now many times what it was prewar SPA foresaw the probability that these facilities would have to be used for other phases of refining. Page 32.

Relations With Russia—Russia's unwillingness to lay her cards on the table will be a major barrier to the development of economic cooperation with that country and the adjacent nations, it was warned in the report of a congressional committee just returned from a European "look-see". The committee recommended that the elimination of barter arrangements, exchange controls and other artificial trade restrictions be made a condition of any loans granted European countries by the United States. Page 28.

Tidelands Suit Delay Asked—Delay in disposing of the tidelands suit was indicated by California's request to the Supreme Court for an additional month in which to frame its reply to the Department of Justice suit. Story below.

Open Shop Case—The Supreme Court also has before it a case involving the right of a state to write an open-shop provision in its constitution which, if held valid, might go far toward slowing down union efforts to dominate industry. Page 31.

Full Employment Cost—The U. S. Chamber of Commerce estimated that more than $100 billion of additional industrial investment would be required if private capital were to carry out the administration's full-employment program. Story below.

Arkansas Views on Gas—In the closing days of the FPC natural gas hearing in New Orleans, the views of Arkansas officials relating to gas exportation and federal control were voiced. Page 29.

AIME Elects—Louis Shattuck Cates is the new head of AIME which announces its annual meeting for Chicago February 25-28. Page 29.

Anglo-American Oil Pact—The Senate Foreign Relations Committee is not expected to hold hearings on the proposed Anglo-American oil agreement until after January 1. Story below.

Anglo-American Oil Pact Hearings Postponed Until After Turn of Year

With Congress planning on a Christmas recess to begin December 20, hearings on the Anglo-American petroleum agreement will not be undertaken by the Senate Foreign Relations Committee until 1946.

In a statement pointing out that his organization had acted in approval of the treaty, Russell B. Brown, general counsel for Independent Petroleum Association of American, declared that the only opposition which has come to his attention has been that of the international cooperatives and "the widespread and simultaneous objections reported to me as having been made to our members by certain employes and officials of Sinclair Oil Corporation."

"The threat to the United States and to the domestic oil producers in the United States implied in a large scale assault on our markets by cheap foreign oil is great," Brown said. "There is a strong effort under way to build sentiment in favor of increasing reliance on such invasion. The argument for big volume imports takes on different guises. At times it is styled a plea for conservation of domestic reserves and in such instances the alarmist cry is raised that we are getting near the end of our ability to supply our markets. At other times the argument is that of building up foreign trade, buying the raw materials of other nations and selling manufactured goods to them. Neither plea goes much farther than generalization.

"The orderly movement of petroleum in international trade is an objective sought in the agreement now before the Senate. Respect for the concessions acquired under the laws of the respective nations is another. The agreement provides the basis for discussion of the question and the numerous issues subordinate to them. I can find no place in the agreement where the sovereignty of the United States is in any way surrendered or jeopardized.

"One difficulty we have encountered here in our efforts to protect the domestic oil industry against improper volume of imports has been the lack of dependable statistical information on foreign operations.

"The forum of study of international oil operations provided in the proposed treaty should correct this situation."

California Asks Delay For Tidelands Hearing

The government's suit to determine the ownership of California's submerged oil fields may not be heard by the Supreme Court until well toward next summer if an application filed last week by California Attorney General Robert W. Kenny for a one-month delay in the filing of the state's answer to the Department of Justice petition is granted.

Kenny asked that the deadline for the filing of the answer be extended from December 28 to January 28, so that the state might have adequate time in which to marshal its arguments in support of its claim to ownership of the tidelands.

Stockpile of Strategic Materials in U. S. Plans

Any surplus government stocks of natural crude rubber or latex that may occur in lots of five long tons or more will not be disposed of but will be placed in a stockpile of strategic materials for which provision was made last week by the Surplus Property Administration.

No limitations have been imposed as to the maximum quantity of rubber and other strategic materials which may be stockpiled. A certain portion, however, will be placed in reserves which will not be disturbed except when to meet deficiencies in civilian supplies sufficient quantities to fill essential needs may be withdrawn and sold at the market price.

The exact volume of the stock piles will be determined by the Army and Navy Munitions Board. They will include minerals and metals, oils and other materials of which the country would have an insufficient supply in the event of another emergency, and the list is based upon the shortages which were experienced during the war just ended.

Hundred Billion Investment For 60 Million Job Goal

Provision of 60 million jobs by industry and agriculture, to carry out the administration's full-employment program, would require the investment of at least $100 billion by industry, it was estimated last week by the United States Chamber of Commerce.

This figure was based on an investigation to determine the actual investment per worker required to furnish employment in a typical American city.

Selecting Gastonia, North Carolina,

because of its representative nature and size, the chamber found that in manufacturing the investment per job varies with the industry but runs from $2200 to $8000; the average in wholesale trade was over $7000, in retailing from $6000 to $8000, and in filling stations and other service establishments from $1500 to $2700. All in all, the chamber reported, an average investment of $7000 is necessary in Gastonia to furnish employment for one individual.

If the Gastonia figures are representative for the nation, a total investment of between $300 and $350 billion would be required to furnish jobs for the 45 to 50 million individuals in non-agricultural employment under the full-employment plan.

Estimates of national wealth place the value of production capital other than in agriculture at between $200 and $250 billion, indicating the major investment task the country has if it is to carry out the administration's program.

Mississippi and Ohio Maps Issued By USGS

The U. S. Geological Survey last week announced the publication of new maps of oil areas in Mississippi and Ohio.

A new subdivision of the Tuscaloosa group on the outcrop and a description of the lithologic character and continuity of the several parts of the group are included in a "Geological Map of Tuscaloosa and Cottondale Quadrangles" in the Mississippi oil fields. This preliminary Map 37 of the Oil and Gas Investigation series may be ordered from USGS, Washington, 55 cents.

Areas with good possibilities for oil and gas production from the Berea Sand still remain to be tested by drilling in large areas in northern Ohio, the Survey said, in introducing Preliminary Map 39 of the Oil and Gas Investigations series. The map may be had from USGS Washington, 65 cents a set.

Much Attention Paid to Russia by Committee Studying Economic Policy

Extension of both short-term and long-term loans to European countries will be required if normal world trade relations are to be re-established, Congress was told last week in a report by a group of members of the House Postwar Economic Policy and Planning Committee who recently made a first-hand study of conditions abroad.

The short-term advances are necessary for the resumption of production in the liberated countries and the occupied regions, which depend upon the immediate procurement of raw materials, transportation equipment, food and fuel, while the longer-term loans are needed for general reconstruction and recovery of the total economies.

The report made it clear, however, that any advance of American money should be contingent upon action by the borrowing country to provide for the free entry of our exports, including the elimination of quotas, exchange controls and other restrictive devices, and called for the early holding of an international conference to consider not only reduction of tariffs, but also such trade controls as those cited, and others.

Much of the committee's study was devoted to the situation in Russia, leading to the conclusion that "there would seem" to be a real economic opportunity for extensive trade between the United States and that country.

"Whether these possibilities of trade expansion can be realized for the benefit of both countries depends not only on the possibility of granting productive loans by the United States to Russia but also upon the full cooperation of both countries in respect to working out the economic conditions for repayment of loans and for working together on equal terms," it was explained.

"Cooperation with Soviet Russia on equal terms is certainly a basic objective of the foreign policy of the United States and, it seems to the committee, of the other countries visited. If, however, the Russian policy continues to insist upon a high degree of secrecy on fundamental aspects of its economy, including its armament policy, and to prevent the entry into Russia and the free passage within Russian boundaries of technicians and members of the press from the United States and other countries, a barrier exists against real cooperation."

New Hardin County Pool Opened by Pan American

Pan American Production Company has definitely opened a new Wilcox sand oil pool north of the town of Kountze, Hardin County, Upper Texas Coast, northwest of the West Silsbee field.

The company's Olive Sternenberg Lumber Company 1, P. S. Watts survey, flowed 530 barrels of 44.5-gravity oil in 16 hours through an 18/64-inch choke, or at the rate of 795 barrels daily. The tubing pressure was 3200 pounds with the shut-in pressure being 3800 pounds. Gas-oil ratio was 2750/1. Total depth was 10,049 feet with casing landed at 9954 feet and completion made through open hole. Pan American has about 7000 acres in the new field.

Harrison to Speak

Thomas H. Harrison, Denver, consulting petroleum geologist, will speak on "The Oil and Gas Record Within the Rocky Mountain Region" at the annual meeting of Rocky Mountain Oil and Gas Association slated in Casper, Wyoming, December 7-8. H. O. English, executive secretary, estimates attendance will reach 1000.

Federal Tax Discussion Slated by Mid-Continent

A tentative program has been announced for the annual Federal Tax Forum of Mid-Continent Oil & Gas Association in Tulsa, December 4-5.

A new feature will be a questions and answers period on miscellaneous federal tax problems. J. A. McNeese of Continental Oil Company, Ponca City, Oklahoma, will be discussion leader and members are asked to send to him any particular subject which they wish discussed.

Topics and discussion leaders follow:

Tuesday morning: "Principal Changes in Existing Law," J. L. Collins, Texarkana, Arkansas; "Withholding," A. J. Wolfe, Tulsa; "Problems Arising Under the Tax Adjustment Act of 1945," Charles R. Bell, Oklahoma City, and S. L. Lugar, Bartlesville, Oklahoma.

Tuesday afternoon: "Net Loss Questions Arising Under Section 122(d) (1) IRC,"G. S. Borden, San Francisco; "Inventory Adjustment Abnormalities Under Section 711(b) IRC," James E. Allison, Tulsa; "Problems Arising Under Section 721 IRC," E. E. Hunter, Houston; "Status Under Federal Employment Tax of Bulk Plant Commission Agents," E. F. Brite, and W. Leo Austin, Tulsa.

Wednesday morning: "Refinery and Other Problems Under Section 722 IRC," Roger Randolph, Tulsa; "Taxation of Net Profits from Oil and Gas Properties," Frank B. Appleman, Fort Worth; "Tax Problems Arising in Connection with Unitized Operations," George B. Brabson, Findlay, Ohio.

Wednesday afternoon: "Treasury Decision 5480." F. B. Plank, Bartlesville, Oklahoma; "Miscellaneous Federal Tax Problems, Questions and Answers," J. A. McNeese, Ponca City.

Geological Society Plans Annual Meet in December

The fifty-eighth annual meeting of the Geological Society of America will be held December 27, 28 and 29 at Hotel William Penn, Pittsburgh, Pennsylvania.

Associated societies which will hold meetings in conjunction with the GSA are, the Paleontological Society, Mineralogical Society of America, Society of Economic Geologist, and Society of Vertebrate Paleontology.

Programs are being planned on geology in war and peace, geology in engineering, and the geological society's obligation to geologic science and public welfare.

Restrictions Lifted

Oil and gas drilling restrictions have been lifted on 45,640 acres of Matagorda Bay tidewater lands by the Texas State School Land Board. A federal order in 1942, and recently removed, closed the land to drilling, designating it for military use.

Lifting of suspension on the Matagorda Bay lands also opened to drilling operations an additional 3787 acres. The acreage is leased to 14 oil companies and drilling may begin in 90 days.

Arkansas Opposed to Further Federal Regulation Over Petroleum and Gas

Arkansas testimony, which was marked by opposition to a consideration of the end use of natural gas by regulatory authorities, in contrast to the position of Louisiana representatives, featured the closing days of the Federal Power Commission hearings on natural gas usage which began in New Orleans November 12.

Chairman O. C. Bailey of the Arkansas oil and gas commission stirred Louisiana state envoys' ire November 19 when he testified that he opposed the consideration of the "end use" of gas by any authority controlling its disposition, saying such a policy would have "only a tendency to depress its price at the well."

Louisiana has been arguing for several years that the export of natural gas for boiler fuel in areas with other fuels is uneconomic waste of natural resources, and this position was strongly brought out in Louisiana testimony last week.

Arkansas testimony had begun with reading of a statement on behalf of Governor Ben Laney of that state in which he pledged Louisiana agencies "our continued cooperation in all things affecting the people of our respective states," but said the great majority of Arkansans "are unalterably opposed to any additional regulation or control by the federal government over the oil and gas industries in our state."

Arkansas' Program

Bailey, who outlined various features of Arkansas' gas conservation program, said:

"It is our conviction that state regulation under these circumstances is more effective than federal regulation could be, and that it is more acceptable to our people. By these means we preserve the principle of state's rights; we accomplish the conservation of our natural resources; and we eliminate a duplication of effort and the burden of excessive regimentation.

"All these things make for general acceptance of sound regulation and are in keeping with the principles of free enterprise, free competition and progressive improvement in the economic status of our people.

"The better price for our gas at the well-heads is our desire . . . "

Cross-examined by E. Leland Richardson, special attorney for Colonel P. A. Frye, director of gas conservation of Louisiana, Bailey admitted FPC authority over building of interstate pipe lines, but stuck to his position that it should not take "end use" into account. He was also cross-examined by Tom McGrath, attorney for the United Mine Workers, railroad unions and coal interests, and John M. Crimmins, attorney for the Koppers company.

High point in today's testimony was the statement by A. W. Philipps, North Louisiana oil and gas man that uncertainty over FPC policy was holding up contracts which he had made for export sale of 50 million cubic feet of gas a day. No names were revealed.

Arkansas witnesses included W. H. Cobb, chief engineer of the Arkansas public service commission, who stressed a claim that the cost of gas to consumers is cheaper only in three other states —West Virginia, Montana and Oklahoma—than it is in Arkansas. He declared rigid rate regulations of his commission made this possible.

R. B. McCulloch, member of the Arkansas commission and its former attorney, explained the history of the enactment of legislation in 1935 setting up the current regulations.

Exportation Favored

Other testimony today included statements by J. D. Caruthers, an oil and gas operator in the Lisbon field and Harvey G. Fields, of Farmerville, Louisiana, appearing as attorney for Citizens Mineral and Royalty Company, for property owners and for himself individually. Both opposed any restriction on the export of gas from the state.

Utilities Commissioner Fred A. Earhart of New Orleans expressed what he said was New Orleans apprehension over possibility of depletion of the state's natural gas reserves as a threat to domestic consumers and to industries which natural gas had brought to the area. H. W. Bell, Louisiana gas conservation engineer, cross-examined by industry representatives, including Alden T. Shotwell, attorney for the Natural Gas Industry Committee, defended his estimates of state gas reserves in the present hearing and said a much smaller estimate which he gave in the Memphis Natural Gas case in Washington in March, 1944, was due to "incomplete data."

Effect of Gas Cycling

Dr. John Huner, Louisiana state geologist, said that expansion of gas cycling operations may tie up one-third of Louisiana's reserves for 15 to 25 years. He said cycling plants were presently in fields with reserves of three trillion cubic feet and that projects approved or favored by the state conservation commission would involve an additional two trillion feet.

Major Thomas H. Allen, president of Memphis' lights, gas and water division, presented a lengthy statement of his city's claims to buy gas in an open market.

Governor James H. Davis, of Louisiana, wired the FPC a request for permission to appear at a later date, after conclusion of present hearings to express opposition to reported plans to convert the Big Inch and Little Inch wartime pipe lines into peacetime natural gas carriers.

Huner said on cross-examination that a hearing would be held in January on rateable takings to determine feasibility and that pending this there were no concrete plans for proration.

C. H. Lyons, Shreveport oil man and vice president of the Mid-Continent Oil and Gas Association, presented a resolution from that group expressing "deep alarm" by the industry over federal encroachment into state gas and oil regulation.

It was brought out in cross-examination by Richardson that Louisiana representtaives take the position that they oppose federal regulation of all gas and oil resources in their state.

AIME Selects Officers, Announces Annual Meeting

The annual meeting of the American Institute of Mining & Metallurgical Engineers will be held February 25-28 at the Palmer House, Chicago. This will correspond to the annual meeting heretofore held year after year in New York in February. There will be more than 50 technical sessions.

A letter ballot of members has resulted in election of AIME officers for 1946 as follows: President and director, Louis Shattuck Cates, of Phelps Dodge Corporation, New York; vice presidents and directors—Holcombe J. Brown, West Newton, Massachusetts, and Erle V. Daveler, American Zinc, Lead & Smelting Company, New York; directors—W. E. Brewster, Wisconsin Steel Works, International Harvester Company, Chicago; Dr. Augustus B. Kinzel, Union Carbide and Carbon Research Laboratories, Inc., New York; Philip Kraft, Newmont Mining Company, New York; David D. Moffat, Utah Copper Company, Salt Lake City; Russell B. Paul, The New Jersey Zinc Company, New York; William B. Plank, Lafayette College, Easton, Pennsylvania.

Cates, the 63rd president of AIME, which will be 75 years old in May, 1946, will be formally inducted at the Chicago meeting.

Asphalt Plant Work

California Asphalt Corporation, a subsidiary of Standard Oil Company of California, has awarded contracts on two items for its new asphalt plant at Willbridge, near Portland, Oregon.

The Fluor Corporation of Los Angeles was awarded contract for installation of process equipment while Chicago Bridge & Iron Company of Chicago will construct tankage.

Cabot Plant Enlarged

Cabot Carbon Company has increased the capacity of its channel-type carbon black plant in the Estes-North Ward field, Ward County sector of West Texas, from 30 million to 38 million cubic feet daily. This plant has been in operation since May, 1937, and obtains a portion of its gas from the Gulf Refining Company's natural gasoline plant in the same area.

Three Proposals for Acquisition of Big Inch Lines Outlined to Senate

Three proposals for acquisition of the Big Inch pipe lines for the transmission of natural gas were laid before the Senate Special Petroleum Committee November 17 in the final session of its hearings on the disposal of government-owned oil facilities.

To enable conversion of the lines the government would have to make broad concessions. One plan is the formation of a cooperative, which would be entitled to tax exemptions. The committee also was asked to support the granting of a certificate of necessity with the transfer of the lines, so as to avoid the railroad and coal opposition which would be offered in any action before the Federal Power Commission.

At the outset for the final hearing, Brigadier General H. L. Peckham, speaking for both the War and Navy departments, suggested that the lines might be used for gas transmission, but agreed with Kurt Borchardt, counsel for the surplus property disposal subcommittee of the Military Affairs Committee, that the national security would be best served if the lines could be operated for petroleum.

Peckham submitted a letter from Admiral F. J. Horne, chairman of the Army-Navy Petroleum Board, pointing out that although the lines will not be needed in peacetime for military purposes, "they would be vitally necessary in case of another national emergency."

Recapture for Emergency

However, Horne said, the maintenance of the lines in an inoperative status by the government would be prohibitively expensive since it would entail extensive replacements in a period of 10 to 20 years, and it is the opinion of the board that the lines should be disposed of to private industry, with a clause which would permit government recapture for use in emergency "unless insistence on such a clause will prevent their sale."

The board also held that the tankers formerly belonging to the industry, or their equivalent, should be returned and that such additional tankers as may be required to conduct normal peacetime operations should be made available as soon as possible. Likewise, he said, the aviation gasoline refineries and toluene plants constructed during the war should be disposed of to private industry.

The board expressed no views regarding the war-built butadiene plants, disposition of which was held to be a matter for consideration by the Inter-Agency Policy Committee on Rubber, but pointed out that they are important to the national economic welfare and should the United States ever again be deprived of natural crude rubber the immediate availability of facilities for the manufacture of synthetic would be vital to the defense of the country.

The three proposals for operation of the Big Inch pipe lines as gas carriers were submitted by a group of New York public utility men headed by Dr. James C. Bonbright of the New York Power Authority; Rogers Lacy, Longview, Texas, owner of 45,000 acres of gas producing land, and a group headed by Colonel D. Harold Byrd of Dallas, called the Independent Petroleum Co-Operative Association.

Lacy's proposal was laid before the committee by Claude A. Williams, former chairman of the Texas Unemployment Compensation Commission, who said his principals were prepared to create a corporation to supply the lines with 300 to 400 million cubic feet of gas daily, purchase the lines and operate them as a common carrier. He assured the committee that a market for the gas is available in the New York-Philadelphia area.

Williams warned the committee that the plan will meet with opposition from the coal and railroad interests, as possibly from the oil industry, and urged that if the line is sold to his group the bill of sale be accompanied by a grant from Congress of a certificate of necessity so as to make unnecessary any application to the Federal Power Commission, where opposition would be pressed.

He told the committee his group could finance the purchase privately but would prefer to do it through the Reconstruction Finance Corportaion "because we feel that if the government still has a mortgage on these lines, the other Federal agency, the FPC, might be a little easier to get along with than they would be if we were privately financed and they were just going to hurt Wall Street a little bit instead of hurting another government agency."

Byrd Proposal

The Byrd proposal was outlined by D. Heywood Hardy, Washington attorney, apparently the only proposal which has been discussed with RFC officials. The group has $100 million available for the purchase or lease of the lines. It would dismantle the Little Big Inch line except where it crosses rivers and at other points where service might be disrupted, keeping such sections for stand-by use by the Big Inch line in case of emergency, and would install additional compressor stations along the latter at a cost of $20 million.

The group also is interested in obtaining a 35-cents a barrel increase in the price of crude, raises of one cent on gasoline and one-half cent on kerosine, and a 15 percent wage increase, it was disclosed.

With the outlining of proposals for conversion of the lines, railroad and coal representatives launched their attack against the threat of new competition, with J. H. Souby, general solicitor for the Association of American Railroads, warning that the same theory of efficient operation based on capacity movement that applies to pipe lines also applies to railroads.

Souby told the committee that the

Last 1945 Hearings This Week

Last 1945 hearings of the Senate Special Petroleum Committee, opening November 28, will be devoted to "a review of the impact of wartime petroleum upon the peacetime economy of America," with PAW and Navy officials testifying it was announced last week by Chairman Joseph C. O'Mahoney of Wyoming.

Among the subjects to be covered, O'Mahoney said, are domestic and world requirements, production, supply, refining and marketing; natural gas and natural gasoline; problems of distribution and transportation, and oil for the future.

PAW Administrator Harold L. Ickes will be the lead-off witness, others to appear including Deputy Administrator Ralph K. Davies, and PAW Division Directors H. Chandler Ide, Howard Page, Philip H. Bohart, W. B. Heroy, A. P. Frame, C. Stribling Snodgrass, James E. Pew, Walter Hochuli, Roy F. Hawkins, George A. Wilson, and Commodore W. G. Greenman, director of the office of Naval Petroleum Reserves.

"It may well be that suggestions will be made in connection with future government-industry cooperation," O'Mahoney commented.

Additional Gas Delivery Requested by Tennessee

An application for immediate authority to deliver to a million cubic feet of gas daily to Taylor-Green Gas Company in Kentucky has been filed with the Federal Power Commission by Tennessee Gas and Transmission Company.

The company explained that the deliveries would terminate next March 31 and that it has been advised that its customer needs the additional gas to avoid a serious shortage.

Tennessee Gas also has applied for authority to purchase four compressor stations in Mississippi, Tennessee and Kentucky which it has been operating under a lease agreement with Defense Plant Corporation.

In an order on the Mississippi River Fuel Corporation last week, the FPC directed a cut of not less than $945,613 annually or about 27 percent, in rates on gas sold to utility customers for resale for public consumption.

O'Mahoney Committee Hears Testimony

Testifying before the O'Mahoney Committee of the United States Senate in connection with disposal of government-owned oil facilities was W. Alton Jones, president, Cities Service Oil Company, shown standing between the two charts. Seated, left to right: Senator O'Mahoney, Kurt Borchardt, counsel of Surplus War Sub-committee of Senate Military Affairs Committee and Senator Moore of Oklahoma.

* * *

Southwest would do better by attempting to find a use for the gas in its own territory than by shipping it out, and contended that the loss of the coal traffic to the New York-Philadelphia area might so hamstring the railroads operating in that section as to render them incapable of adequate service in the event of another war.

Coal and Rails Oppose

He was supported by O. E. Schultz, chairman of the coal and coke committee for Trunk Line territory, who testified that while estimates placed the loss of coal at 6.5 to 7 million tons a year, is gas came in, the displacement might actually run as high as 8.5 million tons. Seven million tons would be 20 percent of the traffic to Philadelphia-New York markets, and the competition of gas, he said, might "be the means of so adversely affecting certain of the carriers as to impair their ability to continue furnishing adequate and efficient service."

Gas transmission through the Big Inch lines would displace 4000 miners and many thousands of railroad workers, with other thousands in the distribution branch of the industry, it was asserted by E. F. Estes of the National Coal Association.

Estes contended the lines should be held in reserve for a future emergency, and warned that if the lines are converted to gas and keyed to industries of vital importance, it would be impossible to reconvert them to oil and in the event of an emergency new lines would have to be built.

CPA to Develop Data On American Industry

A large volume of data on inventories, production, shipments, material consumption and activities of the oil and other major industries during the war will be developed by the Civilian Production Administration on the basis of inquiries which it is inviting from business men as to the type of information they want most.

During the war years more than 3500 different reporting and application forms were used by the War Production Board and its predecessor agencies, on which detailed information regarding materials and activities was required, little of which has so far been published.

To ascertain the types of information industry desires, the CPA has compiled files of approximately 1500 of these forms, segregated by industries, which may be consulted by business men visiting its offices, who then may ask for the information on any specific forms in which they are interested.

No figures are included in the forms in the files, but on the basis of the requests received, the CPA will prepare for publication tabulations which it is indicated are of broad interest.

Florida Open Shop Law Decision Held Important

A possible answer to the drive of organized labor to run industry according to its own rules may be found in a case pending before the Supreme Court involving the question of whether a state can forbid the closed shop.

Carried to Washington from a three-judge Federal District Court, the suit involves an amendment to the Florida state constitution adopted in 1944, providing that "the right of persons to work shall not be denied or abridged on account of membership or non-membership in any labor union or labor organization."

Should the amendment be held valid by the high tribunal, it is believed it would go far toward breaking the strangle-hold which unions are rapidly getting on industry. The Florida decision was appealed by the AFL.

The deterioration of the labor situation and the slowness with which President Truman's labor-management conference is dealing with the problem may spur Congress to undertake consideration of stiff labor legislation, if only as a warning to the unions to make quick concessions for peace.

Many members of Congress, who are dependent upon labor support, are prepared to fight such legislation, but others declare it can be enacted if public opinion solidifies behind it. A street car and bus strike in Washington last week, the second complete stoppage of transportation this month, gave point to contentions that Congress should take prompt action.

Early Relief Expected on Employe Expense Regulation

Employers, who now are required to report all advances or reimbursements to employes in connection with traveling or other expenses, will be given substantial relief in the near future by new Treasury regulations now in course of preparation.

Imposed without warning, apparently in an attempt to catch up with evasions of income tax, the requirement for the reporting of expense payments has been the subject of widespread complaint from employers, because of the heavy accounting burden involved. It was also pointed out that employes, who would be required to report such advances or reimbursements too, even though they resulted in no real income to them, would find themselves in difficulties should they neglect to include all such payments.

So all-inclusive were the requirements that employers would have to report even such minor payments as a couple of dollars to an office boy who bought stamps on his way to work.

Internal Revenue Bureau officials recognized the justness of the complaints received and are now preparing a decision which will bring the reporting requirements within the bounds of reason.

Two Major Drawbacks in Toluene Plant Disposal

Sale or lease to present operators or, where feasible, independent operators of surplus government-owned toluene facilities, with removal for salvage of equipment for which satisfactory sale or lease arrangements cannot be made, has been recommended to Congress by Surplus Property Administrator W. Stuart Symington.

In a report Symington disclosed that the two major problems of disposal of toluene facilities are presented by scrambled facilities and excessive aggregate capacity.

Three petroleum toluene refineries for which expenditures of more than $5 million of government funds was invovled were authorized, and only one of them, the Baytown, Texas, Ordnance Works, was completed, the Cities Service Refining Corporation plant at Lake Charles, Louisiana, and the Phillips Petroleum Company project at Borger, Texas, being discontinued after expenditure of less than $1 million. The Baytown plant has been declared surplus and is leased to Humble Oil & Refining Company, its wartime operator. It was built at a cost of $12,821,000, all of which except $300,000 was public funds, and has a rated capacity of 6,083,000 gallons of toluene per month.

A number of projects for toluene production from petroleum were initiated at refineries, 13 of which were turning out about 20 million gallons a month at the close of the war, or practically ten times the prewar production of by-product toluene from coal.

"Unless some large new use for toluene (for example, as a component of motor fuel) can be developed, it appears that either the facilities for production from coal or those using petroleum fractions will have to be diverted to other uses, such as other phases of petroleum refining," Symington reported. "This conclusion is supported by the existence of a Government-owned stockpile of about 20 million gallons of toluene."

Crude Oil Production in the United States

(Estimates compiled by The OIL WEEKLY. All figures indicate daily averages, in barrels.)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED Nov. 24	Nov. 17
Alabama	500	500
Arkansas	76,300	75,850
California	841,300	836,800
Colorado	21,250	20,950
Florida	150	150
Illinois	205,100	204,100
Indiana	13,500	13,650
Kansas	266,250	267,350
Kentucky	29,550	28,750
Louisiana	368,250	367,700
North Louisiana	74,650	74,100
South Louisiana	293,600	293,600
Michigan	46,000	46,950
Mississippi	53,150	54,150
Missouri	100	100
Montana	19,565	19,900
Nebraska	750	750
New Mexico	94,200	94,200
New York	13,600	13,700
Ohio	7,150	7,250
Oklahoma	383,600	388,700
Pennsylvania	34,600	32,800
Tennessee	35	35
Texas	1,892,950	1,892,950
Upper Gulf Coast	464,350	464,350
East Texas Field	316,000	316,000
Rest of Eastern Texas	127,500	127,500
Southwest Texas	300,250	300,250
West Texas	456,650	456,650
North Texas	147,250	147,250
Panhandle	80,950	80,950
West Virginia	8,200	7,700
Wyoming	97,550	96,100
Total United States	4,473,600	4,471,085

Humble Products Line

Humble Oil & Refining Company is reported to have projected a 250-mile products line to consist of 6-inch pipe with smaller sizes on laterals from its Baytown refinery through Hearne to a point near Arlington, Texas, about midway between Dallas and Fort Worth. Reports also say that an extension will be made to Waco, in Central Texas.

Details of this project are expected to be announced soon.

Increases Granted for 21 Stripper-Well Pools

Increases running from 2 to 35 cents a barrel in crude oil prices were granted last week by the Office of Price Administration for 21 crude pools, more than half of them in Oklahoma, under the stripper-well and high-cost premium plan.

The increases, effective November 1, were announced by OPA November 21, as follows:

Oklahoma: Atlantic, 20 cents; Barker, 35 cents; Empire, 35 cents; Kendrick, 17 cents; Lovell, 25 cents; March north, 20 cents; Norfolk west, 25 cents; Seminole east, 25 cents; Signal Hill, 20 cents; St. Louis district, 20 cents; St. Louis north, 35 cents; Tuskegee east, 20 cents.

Texas: Hendrick, 25 cents; Iatan-East Howard, 2 cents; Lubbock, 35 cents; Remo (Osborne area), 25 cents; Teci (Osborne area), 25 cents.

California: Mountain View, 2 cents.

Colorado: Fort Collins, 24 cents.

Kansas: Catherine, 25 cents.

Louisiana: Lake Mongoulois, 24 cents.

Strake Sells Holdings In Conroe, Texas, Field

George W. Strake, Houston independent oil man, has sold his ½ interest in 1100 producing areas in the Conroe field, Montgomery County, Texas, to Dillon, Reed & Company of New York, and associates, for a reported price of $8½ million.

The acreage is in the Charles B. Stewart, W. C. Lynch and S. H. Bryan surveys. The other ½ interest in the property is owned by Tide Water Associated Oil Company.

FPC Opens Hearing on Plan To Build Texas Gas Lines

Hearings were opened November 26 before the Federal Power Commission on the applications of the Tennessee Gas and Transmission Company for authority to construct additional facilities in Harris, Hidalgo and Nueces counties, Texas, including some 95 miles of 16-inch line from the San Salvador field to the company's main line and a connection with the United Gas Pipe Line Company's Katy-Satsuma line.

The 16-inch line would have an estimated capacity of approximately 99,400,000 cubic feet per day, and would have a dehydration plant capable of handling that volume of gas, the estimated cost of the project being set at $2,260,442. The connection with the Katy-Satsuma line would require about 2380 feet of eight-inch pipe, capable of increasing procurement of gas from the Katy field to 50 million cubic feet daily.

A hearing also opened at Port Allegany, Pennsylvania, November 26, for further consideration of certificates issued in April, 1944, to the Hope Natural Gas Company and the New York State Natural Gas Corporation, which the latter is seeking to have modified to allow it to increase deliveries to the Empire Gas and Fuel Company from 303,750,000 to at least 669 million cubic feet annually and to permit the sale of 304 million cubic feet annually to the Dempsteytown Gas Company. Hope is asking the lifting of limitations to permit it to sell the New York company increased quantities of gas.

THE OIL MAN'S CALENDAR

DEC.	
7– 8	Rocky Mountain Oil and Gas Association, Townsend Hotel, Casper, Wyoming.
13–15	Interstate Oil Compact Commission, Wichita, Kansas.
27–29	Geological Society of America, Annual Meeting, Pittsburgh, Pa., Hotel William Penn.
JAN.	
28	FPC Gas Hearing, Houston.
28	Independent Natural Gas Association, Annual Meeting, Houston.
FEB.	
11	FPC Gas Hearing, Biloxi, Mississippi.
19	FPC Gas Hearing, Chicago.
25–28	AIME Annual Meeting, Chicago, Palmer House.
MAR.	
19	FPC Gas Hearing, Charleston, W. Va.
21–22	Southern Gas Association, Galveston.
APRIL	
1– 2	Society of Exploration Geophysicists, Annual Meeting, Chicago., Stevens Hotel.
2– 4	American Association Petroleum Geologists, Annual Meeting, Chicago, Stevens Hotel.
17–19	Natural Gasoline Association of America, Annual Convention, Dallas, Baker Hotel.
MAY	
7– 9	National Association Corrosion Engineers, Kansas City, Missouri, President Hotel.
16–18	National Oil Scouts and Landmen's Association, Annual Convention, Jackson, Mississippi, Hotel Heidelberg.

Use of Electrolytic Models

Electrical analog proves very useful in studying water flooding and gas cycling

By HOLBROOK G. BOTSET, Research Engineer
Gulf Research & Devolpment Company, Pittsburgh, Pennsylvania

THROUGH the years many instruments and procedures have been developed which have contributed very materially to the effectiveness of our petroleum production methods, and which have helped to clarify our concepts of some of the basic physical phenomena involved in petroleum production problems.

One important method for studying the phases of production which involve flow through porous materials has been the use of the electrical analog. Widespread application has been made of the fact that the basic law of electrical flow, Ohm's law, is exactly analogous to the basic law of porous flow, d'Arcy's law. Ohm's law states that the flow of electrical current through a conducting medium is proportional to the voltage gradient and to the conductivity of the medium. The analogous law of fluid flow, d'Arcy's law, states that the flow of fluid through a porous or permeable medium is proportional to the pressure gradient and to the permeability of the medium.

As a result of this analogy many problems involving fluid flow through reservoir rock may be studied experimentally by setting up in the laboratory an electrical system so designed that the voltage, current and resistance characteristics will bear the proper relations to the pressure, fluid and permeability characteristics of the system under investigation. In general the experimental procedure is much simpler and more clearcut with the electrical system than it would be with a true fluid system, and in many cases experiments can be performed electrically which would be absolutely impossible with fluid systems and porous media.

One of these electrical analogs which is proving very useful in studying water flooding, and gas cycling in condensate fields is the electrolytic model, the earliest published work which appeared in 1933,[1] and 1934.[2,3] Subsequently other investigators improved and extended the method,[4,5,6,7] while the most recent development of the model has been described in the November issue of AIME *Petroleum Technology*.

As a result of the direct analogy discussed above, between Ohm's law and d'Arcy's law, the flow of electrical current through a resisting medium under a voltage gradient may be used to simulate fluid flow through a porous medium under a pressure gradient. Due to this analogy also, the size of the experimental model is of no significance as long as the shape factors such as relative distances between wells and between boundaries, are kept in their proper relation.

Operation of the Model

The operation of the electrolytic model is based on the fact that if two electrical terminals, one positive and one negative, are placed in a conducting liquid (ionized salt solution) the current flowing between the electrodes will be carried by the ions of the salt. These ions represent the fluid particles in the oil or gas reservoir and the water in which they are dissolved represents the porous medium or reservoir rock. By making the dissolving medium gelatinous by the addition of agar-agar, the mechanical diffusion of the conducting ions is reduced to a very small magnitude and essentially the only motion of the ions in the medium is that resulting from the electrical gradient. By the use of the proper salts, colored ions are produced so that their motion in the electrical field may be visually observed and photographed. In the electrolytic model two salt solutions are used, one for the output wells and the porous medium and the other for the input wells. It is desirable to be able to see the ions representing the input fluid; therefore, these are colored while the others are colorless. The two salts generally used in the electrolytic model are zinc-ammonium chloride and copper-ammonium chloride. The copper-ammonium ions are deep blue in color while the chloride and the zinc-ammonium ions are colorless.

One practical design of the electrolytic model (Figure 1) consists essentially of a transforming-rectifying system for converting 110 volts a.c. to the desired voltage d.c. Twenty terminals are connected in parallel, each through a milliammeter and rheostat in series, to the positive or negative terminals of the d.c. system. By means of the double-pole-double-throw switches, each terminal may be connected at will to either the positive or negative potential. Thus each well may be either an input or output well and its current flow, always known and controlled by the milliammeter and rheostat may be adjusted at will. The field or porous medium is a transparent conducting layer of gelatin solution containing 0.1 normal zinc ammonium chloride. The output (produc-

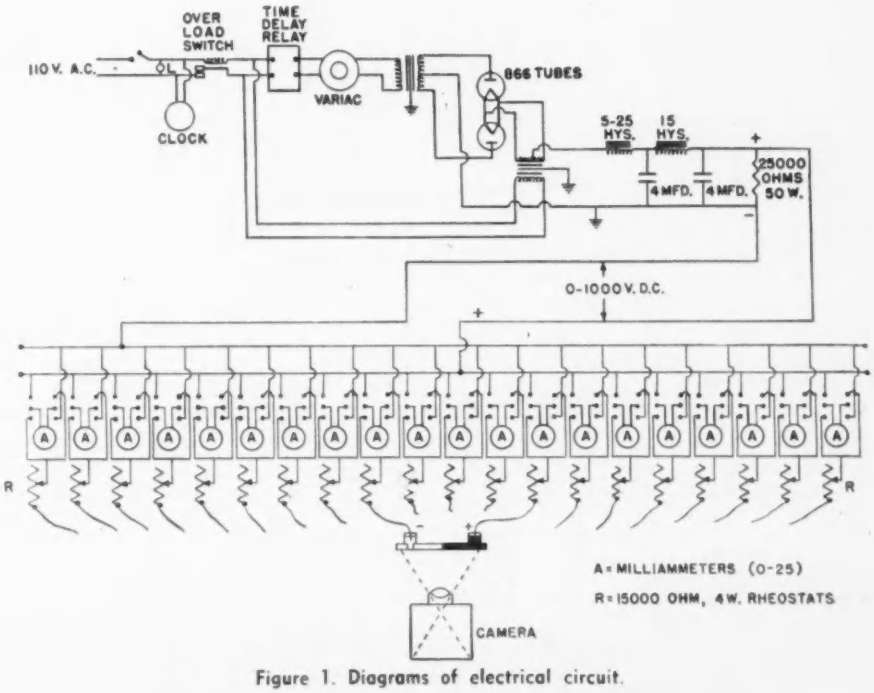


Figure 1. Diagrams of electrical circuit.

This paper is a modification of a paper presented at the October AIME Petroleum Division Meetings in Tulsa, Houston, Fort Worth, and Los Angeles, and published in the AIME Petroleum Technology, as TP. 1945.

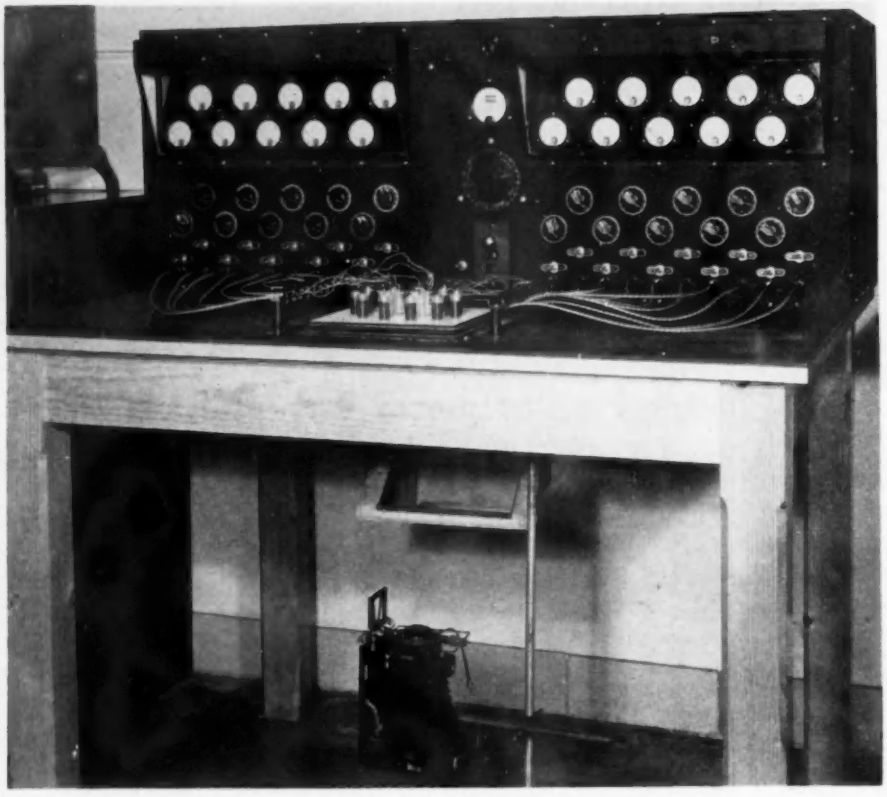


Figure 2. Electrolytic model apparatus.

ing) wells are plastic tubes filled with the same material as the field, while the input wells are filled with a gelatinous solution of 0.1 normal copper ammonium chloride. The wells have 3/32-inch diameter tips which project through the cover plate into the gelatin of the field, which is contained in a transparent container, glass or plastic. The field is covered by a white-face bakelite plate into which well pockets are drilled in such locations that the well tips will penetrate the gelatin layer at the proper positions corresponding to the well locations in the field under investigation. The model field with its cover plate is placed on a glass support so that the flood which is obscured from view by the cover plate may be observed in a mirror placed at a suitable angle below the glass support (Figure 2). Photographs of the progress of the model flood may be taken by a camera placed below the glass support.

The wells are connected to the electrical terminals and by proper positions of the switches the input wells are made positive and the output wells, negative. The voltage is applied by adjustment of the variac and the current in each well is adjusted to the desired value. The copper-ammonium ions are deep blue and hence as they travel outward from the input (positive) to the output (negative) wells, the area through which they have travelled is colored a deep blue and may be readily observed and photographed. Figure 3 shows a series of photographs of an experimental flood. The composite flood picture in this illustration was made by cutting out and superposing several pictures of the flood and then rephotographing.

In the model the spacing between wells is from 5/8 to 1½ inches with the field gelatin thickness averaging 1/16 to ⅛-inch. The maximum area included in a single field is about 8 x 10 inches.

If larger areas are required, the field may be divided into two or more parts with an appreciable overlap. This overlap is to eliminate the distortion due to edge effects and the resulting pictures of the flood patterns in the two sections, if taken at correspondingly relative times, may be matched in the overlapping portion. The thickness of the model field really corresponds not to sand thickness but to available pore volume per unit of area. Since in many cases, particularly in old fields, this is not accurately known, or varies only slightly, it is frequently satisfactory to use a uniform field thickness in the model. In cases where it is desired to have the model thickness correspond to pore volume variations, a variable thickness model may be made of transparent plastic as described elsewhere.* The total time required for the completion of one flood pattern is generally from two to six hours, depending upon the well spacing, field thickness and current.

Current Flow

The current flow through the various injection and producing wells in the model is adjusted to correspond to the relative injection and producing rates used in the field. In some experiments it may be desirable to adjust the current flow in the model to achieve certain results in a flooding experiment such as simultaneity of arrival of the input fluid at all the producing wells. From the relative rates used in the model corresponding relative rates needed in field practice may be calculated.

In adjusting the current flow in the model, the groups of injection and production wells are considered separately. Assume, for example, that there are ten injection wells in a condensate field under a cycling program and that to attain the desired flood pattern a current of ten milliamperes each flows into five of the wells, and five milliamperes each into the other five. The total input current is thus 75 milliamperes. If the gas injection system in the field is capable of handling 60,000 mcf per day, each milliampere in the injection wells will correspond to 60,000/75 or 800 mcf, so that the injection rate into the wells taking 10 milliamperes would be 8000 mcf per day and 4000 mcf per day into those taking 5 ma. In this same experiment there might also be seven producing wells, four with a current of 15 milliamperes and three with five milliamperes each, making a total output current of 75 milliamperes (equaling the input current). If the production from this field were 75,000 mcf per day, each milliampere in the producing wells would then correspond to 1000 mcf of gas production per day.

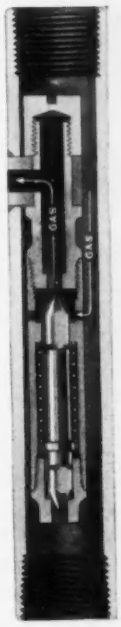
In the above example it will be noted that the mcf per milliampere is less for the injection wells than for the producing wells. In practice, the production rate for a field frequently exceeds the injection rate with a resulting gradual decline in over-all field pressure. This unbalance of production vs. injection cannot be simulated in the electrolytic model because of the "incompressibility" of the electrical system. The current input must always equal the current output. However, negligible error is introduced by regarding the producing and injection wells as unit groups and determining the production and injection rates for each in the manner described above.

Time Scale

It is frequently desirable to know the time scale of the model, which may be determined as follows: A photograph of the flood is taken after the flood pattern has covered an appreciable area, but before it has reached any output wells. The area of the flood around a given well is planimetered and converted into acres covered. Knowing the thickness of the sand, its porosity and connat water content, the pore volume swept out by the flood at this stage may be determined. The total volume of fluid injected into the well in question divided by the daily injection rate will give the number of days required to obtain the pattern as measured. This lengh of time in days then corresponds to the elapsed time in minutes required to get this pattern in the model and the time scale as well as the ratio of input rate to milliamperes is established, provided of course, that the flow rates in the model are maintained constant, which is the customary procedure.

By plotting the total input against the area flooded out as determined by the planimeter, curves are obtained like those of Figure 4, which were derived from the photographs of Figure 3. The photographs show only the lease area, while the flooding experiment involved a considerably larger area, due to the fact that the offset wells must be included in such experiments in order to obtain proper pressure distributions over the lease area. Hence the total area of the flood was used in obtaining the upper curve of Figure 4, while the lease area shown in the photographs was used in determining the lower curve. The curve showing the amount of water in the production was obtained from incre-

for ROCK BOTTOM PRODUCTION COST IN NON-FLOWING WELLS USE Guiberson GAS LIFT EQUIPMENT



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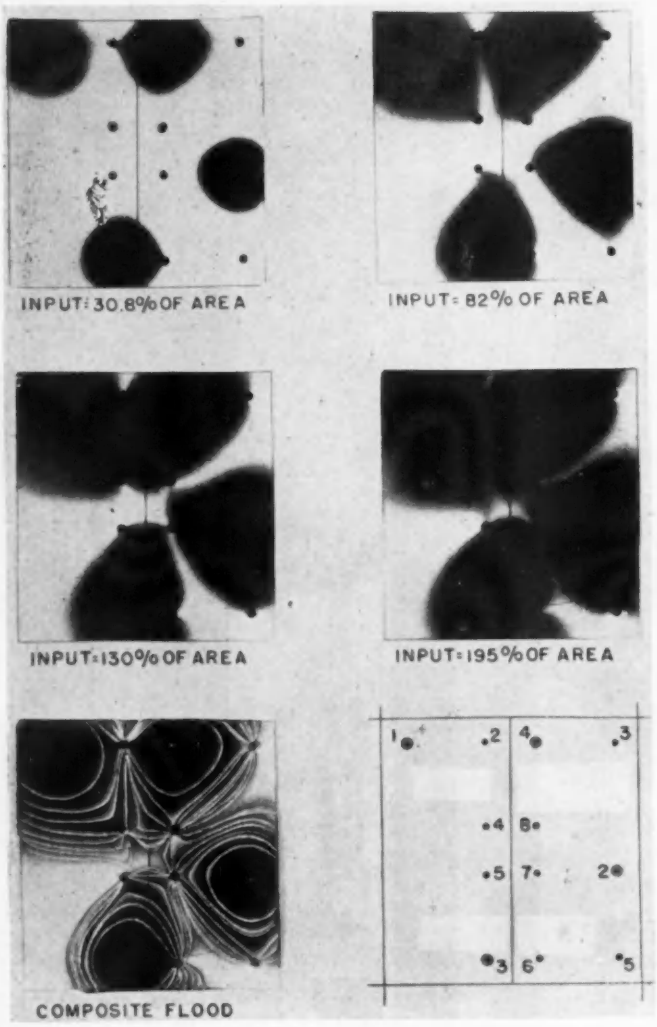

Figure 3. An experimental flood.

mental differences between the straight line representing total input and the upper curve representing total area flooded out.

Some Limitations of the Model

From the discussion above, one of the apparent limitations of the model is the fact that the system must be regarded as incompressible; production must always be accompanied by an equal volume of injection and vice versa. This is due to the fact that the model is purely an electrically resisting medium and all current that flows in must simultaneously flow out. This limitation is comparatively insignificant, however, and is generally ignored in the interpretation of the model results.

Another limitation to the application of the model results is the viscosity relation between the input and output fluids. The flood pattern obtained in the model is that which would develop if the viscosities and densities of the input and output fluids were equal. This is rarely, if ever, the case in practice, and the more divergent the relative viscosities the less applicable the model results. Thus the model is very well suited to study cycling in gas condensate fields where viscosity differences are slight, and completely *unsuited* to the study of the spread of a gas cap in an oil zone under pressure maintenance, where there is a large viscosity difference between the oil and the gas in the gas cap.

The fact that the permeability of the field must be assumed to be uniform is probably the most serious limitation in the model experiments. So far no really satisfactory method has been developed to introduce horizontal permeability variations into the model. In applying the results of these experiments, therefore, it is necessary to make proper allowances for the distortions in the patterns which variations in permeability would introduce. In many cases permeability variations are slight enough to introduce no significant error; in other cases permeability variations may not be well enough known from well logs to permit simulation in the model if such were possible, particularly since the permeability desired is that to oil or gas in the presence of the true connate water content of the formation. Hence, the uniform permeability used in the model is not generally thought to be sufficiently in error to impair seriously the validity of the results obtained.

The electrolytic model is a useful tool for studying certain problems of secondary and cycling programs in condensate fields. In using the model, care must be taken that it is applied only to those problems for which its results will be valid. For those problems to which it is applicable, no other method will give such graphic results as quickly or cheaply.

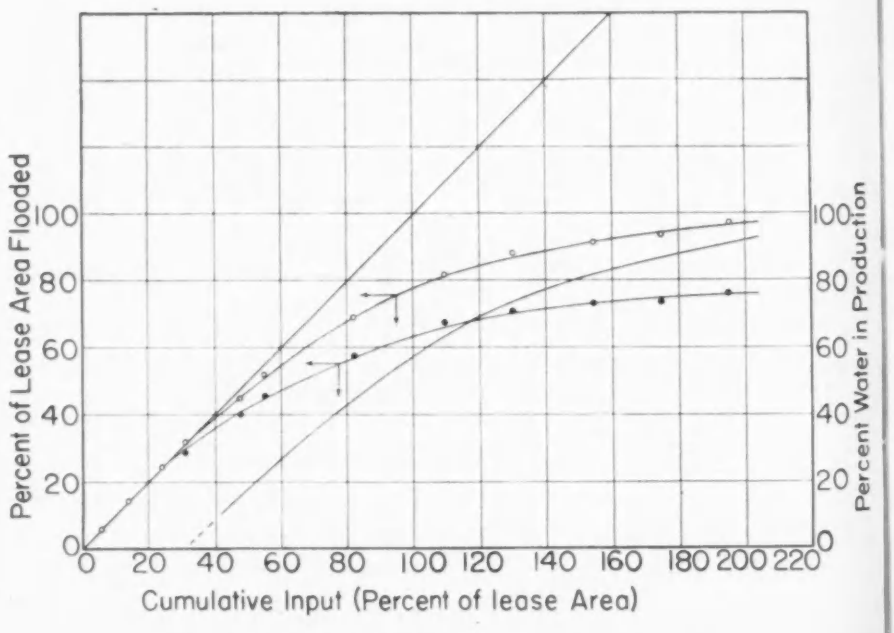

Figure 4. Curves derived from the flood patterns of Figure 3.

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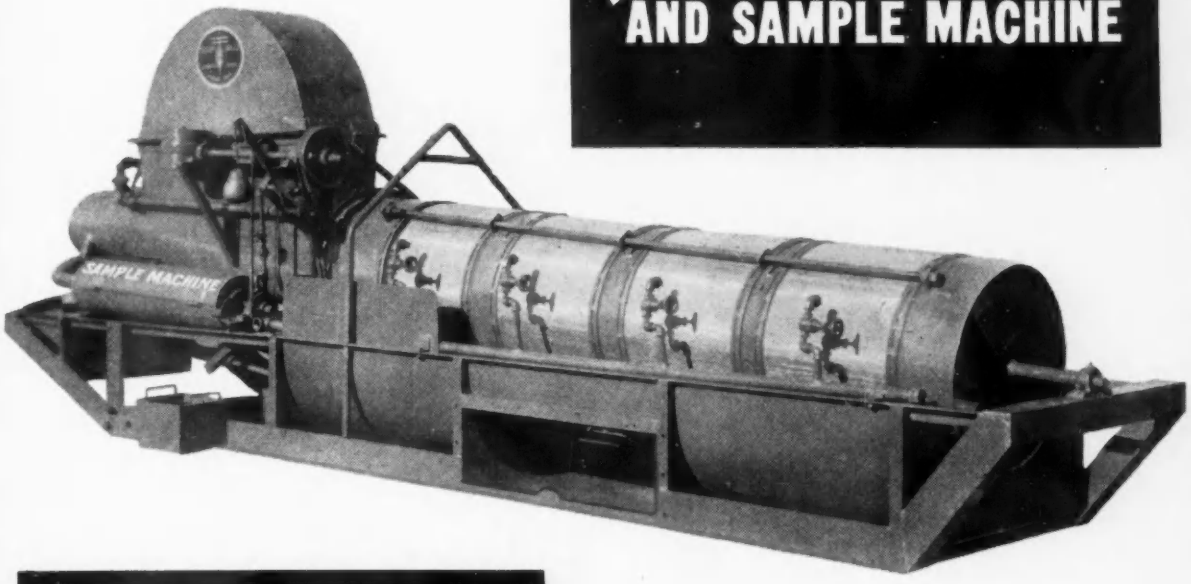
[8] AIME Petroleum Technology, Nov. 1945. TP. 1945.

THE *Thompson* SHALE SEPARATOR AND SAMPLE MACHINE



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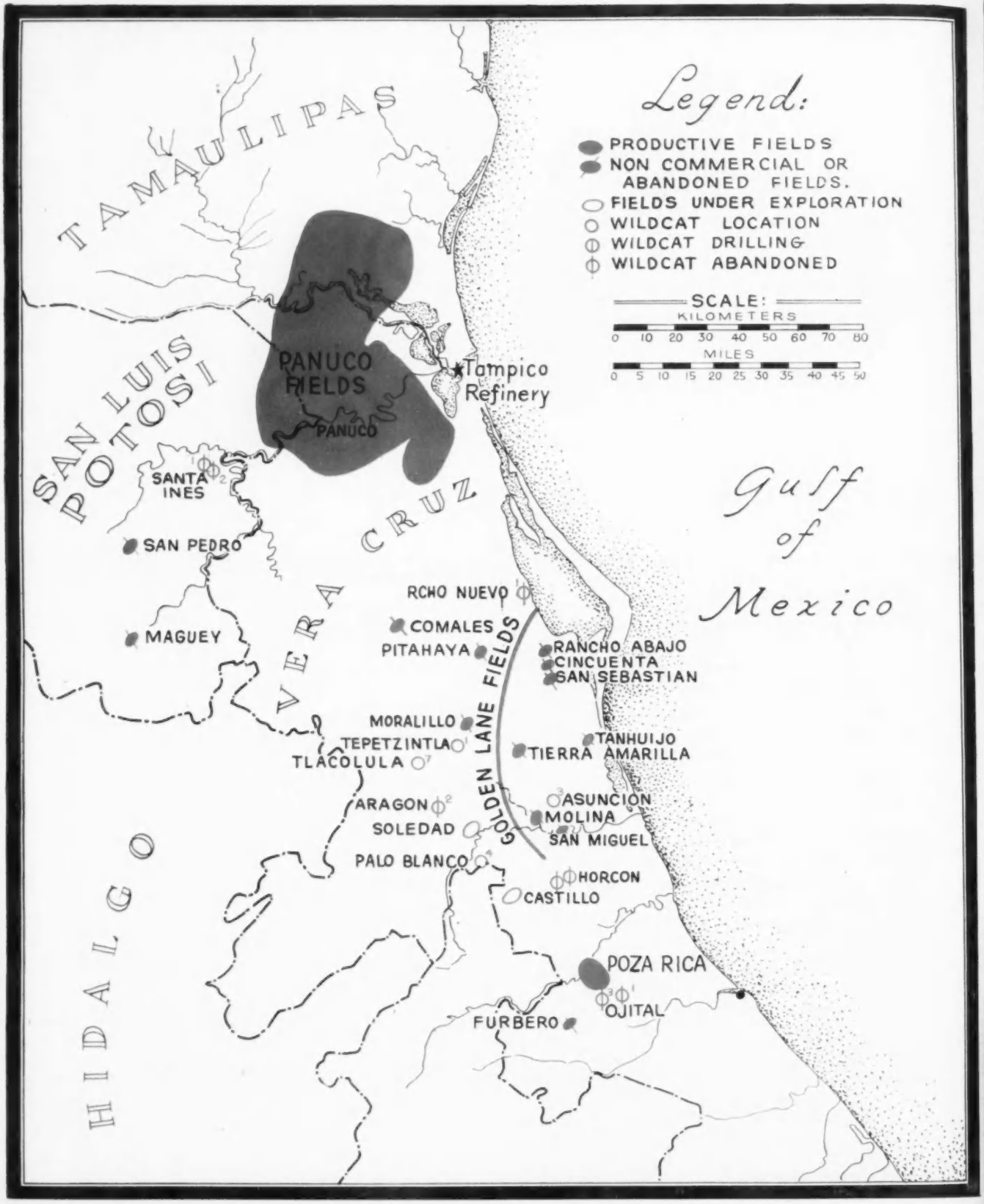
Pemex Production Occurs



Oil fields of the "Northern Zone," shown here, account for a large part of Mexico's past and present crude oil production, and Pemex hopes to find more "Golden Lanes" and "Poza Ricas" in the region.

In Two Coastal Areas

A report prepared for The Oil Weekly by the production department of Petroleos Mexicanos, under supervision of J. M. de la Garza Cardenas, manager of that department.

Part 5

MEXICO Looks Ahead

THE production of oil in Mexico occurs in two areas, the Tampico-Tuxpan Region or Northern Zone, and the Isthmus of Tehuantepec Region or Southern Zone. Both belong to the coast of the Gulf of Mexico.

The Tampico-Tuxpan-Poza Rica region consists of three well-defined areas, the Panuco fields (Ebano district), the Golden Lane (Cerro Azul district), and the Poza Rica field.

Panuco Fields

The Panuco fields lie for the most part in and between the valleys of the Panuco and Tamesi rivers west of and extending to within about nine miles of the port of Tampico. The names of the fields in this district are taken from the principal haciendas of the area as follows:

Cacalilao
Salinas-El Barco-Caracol
Corcovado
Panuco
Topila
Ebano-Chapacao
Altamira
Limón

The geological structure causing the accumulation of oil in these fields is the continuation of the Sierra de Tamaulipas. The area where these fields are included is about 36 miles north to south and 30 miles wide in a direction from east to west.

These fields were in commercial production in 1904. In 1938 there were 527 productive wells with an average of 20,000 barrels of oil per day.

Since then "Petroleos Mexicanos" has drilled 54 more wells, the production of which has served to slightly increase the total production capacity.

With the exception of just a few occasions, these fields have not been produced to their maximum capacity due to unfavorable inside and outside market conditions.

Golden Lane Fields

The Golden Lane or Cerro Azul district is a productive strip of land of about 53 miles long by one mile average in width, beginning approximately 50 miles south of Tampico, at Dos Bocas, and extending in the form of a wide arc as far as the hacienda Paso Real, south of the Tuxpan river. Geologically speaking, this is a large and narrow anticline on top of which the oil is found in a porous limestone. Here, the names of the fields also have been obtained from the names of the principal haciendas as follows:

San Diego-Chiconcillo
Tepetate-Norte Chinampa
Sur Chinampa-Norte Amatlán
Sur de Amatlán
Zacamixtle
Toteco-Cerro Azul
Juan Felipe-Moralillo
Alazán
Potrero del Llano-Horcones
Cerro Viejo
Tierra Blanca-Chapopote Núñez
Alamo-San Isidro
Tierra Amarilla
San Sebastián
Tanhuijo

Out of a total of 1055 wells drilled up to 1938, 527 were then productive, with an average production of 23,160 barrels of oil per day.

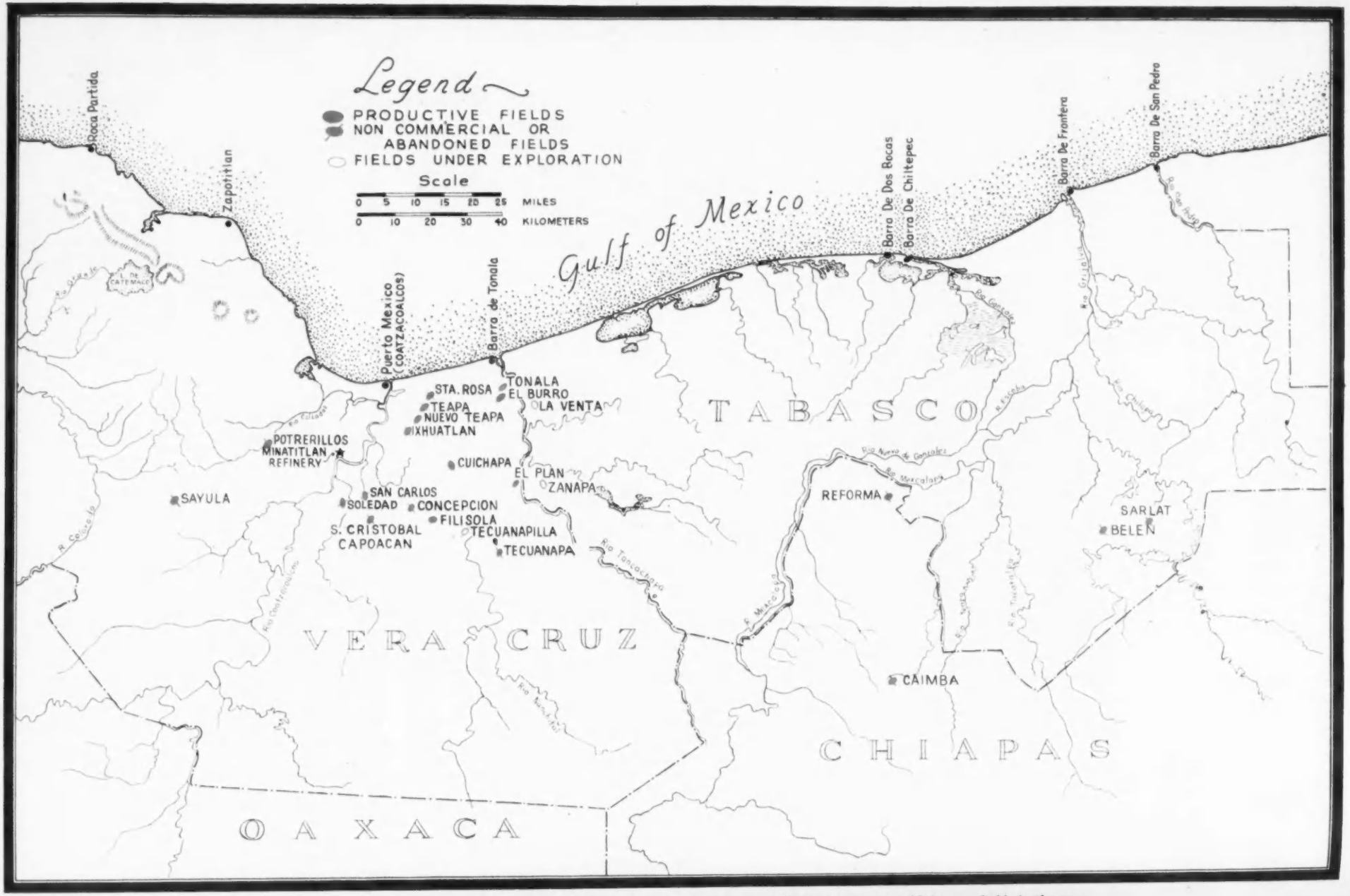
Since these fields were practically totally drilled, only one more well was drilled after this date and was unproductive.

The production in this district after 1938 has been irregular due to frequent changes in the demand of the type of crude produced, it being necessary to regulate the production to the needs of the moment, almost always less than the total production capacity of the fields therein. Due to this rate of production below potential capacity, it is possible to obtain now practically the same or greater production than eight years ago, though the reserves have declined noticeably.

The Poza Rica field is approximately

A flowing well at Poza Rica, hooked up to produce through either or both the casing and the tubing.

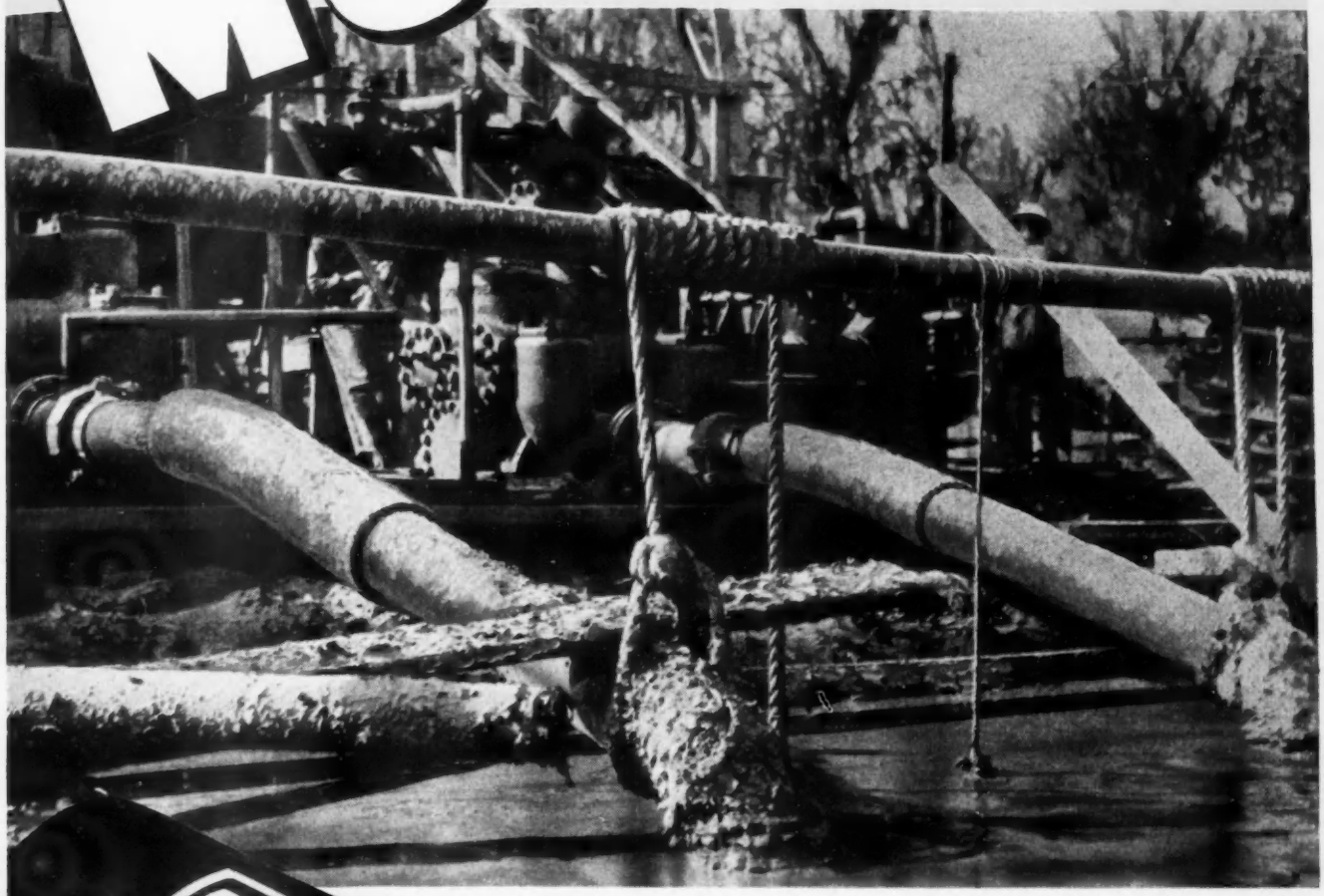
At Poza Rica. Beyond palm trees is original small absorption gasoline plant.



Fields of the "Southern Zone" or Isthmus district are associated with salt structures, and Pemex hopes to establish more fields in the area

Fields of the "Southern Zone" or Isthmus district are associated with salt structures, and Pemex hopes to establish more fields in the area

MUD reaches down for oil



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A bridge is being built to replace this manually propelled ferry on the Cazones River, which flows across the northwest end of Poza Rica field.

Drag-line at work on crude oil stabilization plant under construction at Poza Rica in connection with large absorption gasoline plant.

equidistant from the Ports of Veracruz and Tampico, 19 miles from the Gulf of Mexico. It is connected with the City of Mexico by a first-class road 186 miles in length that goes through the cities of Pachuca, Tulancingo and Villa Juárez, Pue., and which practically follows the pipe line that supplies the refinery in Atzcapotzalco.

Since 1930 and up to 1938, 18 wells were drilled for a maximum production of 64,705 barrels of oil per day.

A total of 52 wells have been drilled with the purpose of extending the productive area.

Being one of the largest fields in the world, this field has been under constant vigilance and study in order to exploit it efficiently to insure maximum recovery.

Great care has been taken not to produce water prematurely, and production in each well is adjusted so as to obtain the best flowing conditions.

Isthmus Fields

The fields of the Southern Zone are in the northern part of the Isthmus of Tehuantepec about 124 miles southeast of the port of Veracruz. Various fields exist in this region in which the accumulation of oil is due to geological structures associated with salt domes.

The fields of this zone are much younger than those of the northern zone, except Poza Rica, since the older of them is Filisalo, which was discovered in 1923.

Filisola is in the lands of hacienda Filisola, municipality of Minatitlán, in the left margin of the Uzpanapa river and about 20 miles south of Coatzacoalcos.

Although drilling operations began in 1923, in 1928 a total of 81 wells were completed, of which only 56 were productive in 1938 with a maximum production of 1635 barrels per day. After 1938 seven more wells were exhausted, reducing production to 826 barrels per day at the present time.

This field is totally drilled. Maximum production by Petroleos Mexicanos has been obtained by maintaining and improving the production equipment.

The next field of commercial importance discovered in the Isthmus of Tehuantepec was Tonalá in 1928. It is in the right margin of Agua Dulce creek, municipality of Coatzacoalcos, about two miles from the junction of this creek with the Tonalá river.

Between 1928 and 1934 the field was totally drilled with 96 wells, of which 92 were productive. In 1938, 82 of these were in production by means of gas lift and mechanical pumping, obtaining an average production of 4321 barrels of oil per day. Now only 74 wells are producing by pumping with a total production of 2520 barrels per day.

When drilling had not finished in Tonalá in 1931, El Burro field was discovered near and southeast of the former. From 1931 to 1934 a total of 43 wells were completed. Subsequently, Petroleos Mexicanos drilled two more wells to test the possibility of production of new sands. One was dry and the other was a small producer from the same sands that produce in other wells.

In 1938, 34 wells were producing by different systems of gas lift with a daily production of 2912 barrels. Present production is 2257 barrels daily from 24 wells. With the continuous decline of the amount of gas produced with the oil and the progressive increase of water with the oil, the production by means of gas lift is being abandoned and the wells converted to mechanical pumping which will make it possible to operate the field to depletion.

Also in 1931 drilling was begun in a new field, El Plan, situated in the left bank of Tancochapa river which runs into the Tonalá river, in the jurisdiction of Minatitlán on lands of the hacienda El Plan.

From 1931 to 1938, 49 wells were completed to an average depth of 2625 feet. In 1938 only 28 of these were productive for a total of 15,284 barrels per day. Later Petroleos Mexicanos continued the drilling until 37 productive wells and 12 dry holes were completed. Having drilled practically all the productive zone of the 2625-foot level by 1942, Petroleos Mexicanos began to drill deeper wells, having discovered in 1943 a new productive horizon of large possibilities at an average depth of 6069 feet.

At the present time there are 43 producing wells making 8577 barrels per day and an intensive drilling campaign that should augment the production of this field is in progress.

The field of Cuichapa is in the north part of the Acalapa property in the municipality of Moloacán, Ver., southeast of Coatzacoalcos at a distance of about 19 miles.

Drilling commenced in 1934 and by 1938, five wells were finished. All of them had been out of production because there was no means to transport the oil from the camp.

Later Petroleos Mexicanos built an oil pipe line to take production to the Minatitlán refinery, and 1045 barrels per day are now being produced.

Since 1938, five more wells have been drilled. At the present time one drilling rig is active.

Beginning in 1935, the production of crude oil in Mexico, in round figures has been as follows:

Year	Barrels
1935	40,038,000
1936	46,200,000
1937	46,700,000
1938	38,200,000
1939	43,100,000
1940	44,100,000
1941	42,900,000
1942	34,800,000
1943	35,100,000
1944	38,200,000
1945 (Jan.-May, 1945)	17,250,000

It may be seen from the foregoing figures that in 1938 there was a marked decrease in production, primarily due to the closing of foreign markets to Mexican crude. Such markets began to reopen in 1939 with the exchange-of-goods sales made to Germany and Italy, which, together with the sales to the United States and Latin American countries, reached their maximum in 1940. From then on, and due to the world conflict, exports took a downward grade and have been of little consequence ever since.

Importance of New Fields

The discovery of new fields has been of paramount importance to Petroleos Mexicanos. Paralleling the ability to increase the productive capacity and reserves of fields known in 1938 and the acquisition and subsequent operation of new drilling rigs, the search for new reservoirs has been on the upward trend, step by step, until there has now been developed a very ample program, under-

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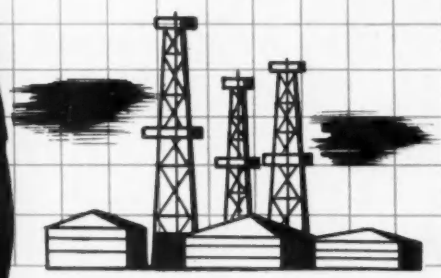
Go Down



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Complete Service for Every Field

Mud circulating system and pumps at drilling well in Soledad area, where first wildcat proved productive. Shale shaker is outside picture to right.

On the derrick floor at drilling well, Soledad 2, second test of new producing area of Tampico-Tuxpan region.

taken during the current year, for exploration wells which may bring about the discovery of new oil reservoirs.

During and immediately after 1938 exploration work was limited to the completion of the wells started by the expropriated companies that were then in the process of drilling. Thus, two wells were completed in 1938 and one more in 1939. During 1940 it was impossible to assign any rigs to wildcats, for which reason no exploration work was accomplished throughout that year.

However, in 1941 a new wildcatting campaign was begun, Pemex having drilled one well that year, two in 1942, three in 1943, four in 1944, and three during the first half of 1945.

Of the 13 wildcats drilled from 1941 to the middle of 1945, two were completed as productive wells: Mision 1 and Soledad 1.

Mision 1 was brought in April 10, 1945, with an initial production of 6 million cubic feet of gas and 45 barrels of distillate per day, with a 25/64-inch choke, at a depth of 6040 feet. Mision is a new gas field located in the Municipio de Reynosa, Tamaulipas, and approximately 23 miles southwest of McAllen, Texas. To develop this field the well Mision 2 is being drilled.

Soledad 1 was brought in July 30, 1945, after several production tests, with an initial production of 40 barrels per day of 40-gravity oil, at a depth of 6480 feet. This discovery is west of the Golden Lane fields and may be a new pool of some importance.

Soledad 2 is being drilled to get more information about the Soledad structure. Soledad 3, soon will be drilled for the same purpose.

Storage Tanks in Mexico

Storage tanks are distributed in the Northern Zone as follows:

	Tanks	Capacity in Barrels
Panuco Fields	128	1,930,407
Golden Lane Fields	89	1,662,101
Poza Rica Field	95	606,350
Barra de Tuxpam Terminal	18	944,292
Poza Rica-Atzcapotzalco Pipeline	12	65,610
	253	5,205,760

Storage tanks are distributed in the Southern Zone as follows:

	Tanks	Capacity in Barrels
El Plan Field	105	220,169
Tonalá and El Burro Fields	145	139,235
Cuichapa Field	6	74,209
Filisola Field	10	98,426
Nanchital Terminal	12	275,036
	278	857,075

Significant Information on Currently Drilling and Recently Completed Wildcats of Petroleos Mexicanos in Mexico

Well and Location	Date Completed	Total Depth (Feet)	Status of Drilling Well or Results in Completed Well
WILDCATS DRILLING SEPTEMBER 1, 1945—			
Northern Zone:			
Castillo de Teayo No. 3, Veracruz State, Castillo de Teayo Municipality, Castillo Haciendas, Lot No. 67, Frac. A.	.....	7795	In production test of Tamabra limestone, Cretaceous age; oil and gas shows
Soledad No. 2, Veracruz State, Temapache Municipality, Gaudalupe Hacienda, Frac. B	.....	6713	Drilling in Tamabra limestone, Cretaceous age; oil and gas shows.
Mision No. 2, Tamaulipas State, Reynosa Municipality, La Mision Land, Frac. B.....	.....	4892	Drilling.
Norias No. 1, Nuevo Leon State, General Bravo Municipality, Comunidad del Zacate, Las Norias Property.	.....	1413	Drilling.
Southern Zone:			
Tecuanapilla No. 2, Veracruz State, Minatitlan Municipality, Romero Ruoio first zone, Lot No. 3.	.....	1094	Drilling.
La Venta No. 6, Tabasco State, Huimanguillo Municipality, La Venta Property.....	.....	3054	Drilling; running Schlumberger.
WILDCATS COMPLETED IN 1945 UP TO SEPTEMBER 1—			
Northern Zone:			
Mision No. 1, Tamaulipas State, Reynosa, Municipality, La Mision Land, Frac. A.....	4-10-45	6040	Productive: 6,000,900 cu ft. of gas and 45 bbls. of distillate per day with 25/64" choke. Mision Sands, Vicksburg Formation, Lower Oligocene.
Ojital No. 3, Veracruz State, Papantla Municipality, Ojital y Potrero Hacienda, Lot No. 152.	5- 7-45	8031	Dry Hole; Tamabra limestone, Cretaceous age.
Soledad No. 1, Veracruz State, Temapache Municipality, Gaudalupe Hacienda, Frac. A.	7-30-45	6480	Productive: 40 bbls. per day of 40 gravity oil with 8/64" choke; Tamabra limestone, Cretaceous age.
Southern Zone:			
La Venta No. 4, Tabasco State, Huimanguillo Municipality, La Venta Property.....	5- 2-45	3648	Dry hole; salt. Above salt, Middle Miocene formations.
WILDCATS COMPLETED IN 1944—			
Northern Zone:			
Sta. Ines No. 2, San Luis Potosi State, San Vicente Tancuayalab Municipality, Hacienda de Sta. Ines, Santa Margarita Property.	6-15-44	4760	Dry hole; Tamaulipas limestone, Cretaceous age.
Aragon No. 2, Veracruz State, Chicontepec Municipality, Hacienda de Francia, Lot No. 202.	11-15-44	7260	Dry hole; Tamaulipas limestone, Cretaceous age.
Southern Zone:			
Zanapa No. 1, Tabasco State, Huimanguillo Municipality, National Lands (Federal Government Property).	7-18-44	343	Dry hole; salt. Above salt, Quaternary age formations.
La Venta No 2, Tabasco State, Huimanguillo Municipality, La Venta Property.....	11-28-44	2493	Dry hole; salt . Above salt, Upper Miocene formations.

SIMPLICITY IS THE FIRST REQUISITE OF SAFETY

Look for the loads that aren't there!

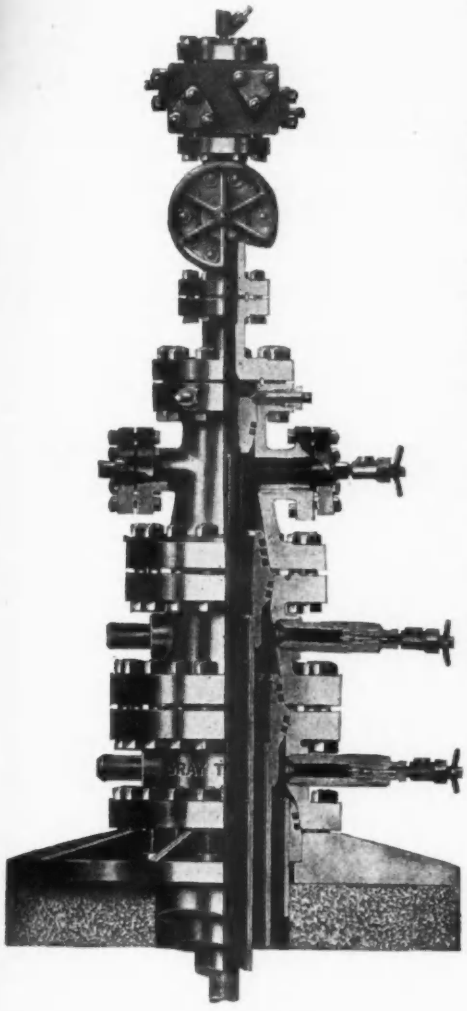

FIGURE 1A

Complete Well Head Assembly equipped with Composite Manifold, Valve Removal, Installation and Removal.

It's a miracle, instead of luck, when large pressure subject areas don't give trouble. In Well Control, as in hydraulics, minimizing pressure subject areas is a first requisite in the efficient control of pressures. Seals for controlling pressures from casing strings should be relatively the same area as that of the casing.

This is accomplished in Gray Systems of Well Control by moving the seal from the large casing head flange areas to smaller casing hanger areas. Casing hangers perform the multiple service of hanging casing and maintaining seals both from within and without the casing they support. Seals are obviously the most important element of a control structure, for the very purpose of a control structure is to captivate or seal that which it controls.

There are many advantages accruing from this reduction of pressure subject areas. Savings of materials is one, the decreased physical loading of materials gains more strength with less weight—flanges, bolts, valves and control accessories provide proportionately larger factors of safety. Structures are maintained large enough to permit essential operations, while at the same time control devices are small enough to maintain the proper ratio of balance with the casings upon which they are used. As depth increases, casing sizes are reduced to withstand pressures encountered; sizes of surface control equipment are likewise reduced, effecting a consistent balance of the whole.

When you reduce the diameter of the casing head pressure subject area, when you use drilling control equipment of like size with the casing, when tubing master valve is consistent in size with the tubing, flow from which it controls, you reduce the load or pounds of pressure exerted, in many cases as much as 50 per cent.

The whole is greater than any of its parts.
Look for the loads that aren't there.

THE WHOLE IS GREATER THAN ANY OF ITS PARTS

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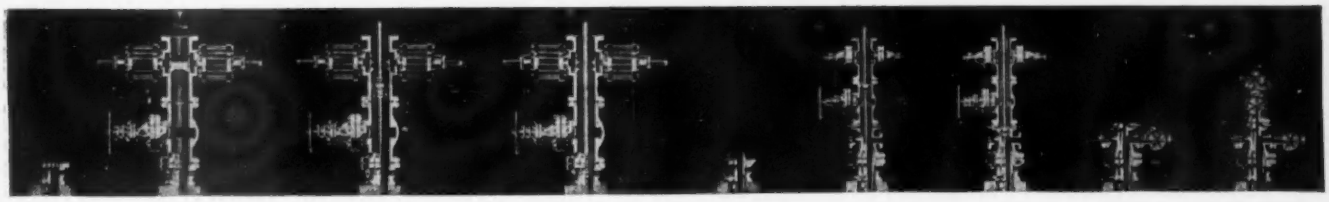

Casing Head Attached | Drilling | Running Casing | Casing Landed | Drilling Control Equipment Removed | Drilling-in and Running Tubing | Tubing Landed | Control Equipment Removed | Manifold Attached

Behavior of Water-Input Wells

Part 2

By PARKE A. DICKEY
Quaker State Oil Refining Corporation, Bradford, Pennsylvania
and
KURT H. ANDRESEN
South Penn Oil Company, Bradford, Pennsylvania

THE preceding installment discussed the decline in intake rate as the reservoir fills up, and the effect of the different patterns on the subsequent steady intake rate. As a matter of fact, after the reservoir has been completely (or almost completely) saturated with liquid, the water-intake rate would be expected to increase slightly as the effective permeability of the sand to water increases with the removal of oil. Unless, however, the quality of the injected water is exceptionally good, the intake rate does not even remain constant, but continues to decline because of plugging of the sand face at the input wells by suspended matter or other impurities in the water.

It is important to be able to tell, as the intake rate declines in the early stages of injection, whether the decline is due to plugging of the sand and, therefore, remedial, or to the fillup of the reservoir and, therefore, irremedial. What is required, therefore, is a method of determining the intake capacity of the well itself without regard to the conductivity of the whole system surrounding it. Such tests could be made periodically on certain selected wells scattered over a flood, and a close check on the efficiency of the input wells could be maintained.

It is believed that an entirely practical method of determining the efficiency of an input well is determination of the *localized injectivity index* of the well. Injectivity index is the reverse of productivity index,[6] a concept that has proved of value in the study of the efficiency of producing wells.

Injectivity index is defined[7] as "the number of barrels per day of gross liquid injected into a well per pound per square inch pressure differential between mean injection pressure and mean formation pressure referred to a specific subsurface datum, usually the mean formation depth." In order to be most useful, in studying the behavior of individual input wells this concept should be restricted to define the conductivity of the individual well and not the general conductivity of the whole system; i.e., it should not be affected by the whole area of sand surrounding the well and the productivity indices of the adjacent producing wells. It should be the determination of the conductivity of a cylinder of sand surrounding the well, in which cylinder the majority of the pressure drop takes place, and whose inside wall is the sand face—which is apt to become clogged by impurities in the injected water. This restricted index will be called the "localized injectivity index."

Before discussing injectivity index, and methods for its determination further, it is necessary to explain certain transient phenomena that take place when the intake rate of an injection well is changed.

Transient Back Pressure: Theoretically, the flow of water from a well into the surrounding formation will continue until the intensity of the sand-face pressure is reduced to that of the reservoir pressure. In actual practice, if the pressure on an input well is reduced suddenly to atmospheric pressure at the surface, the well backflows vigorously for a few minutes and may continue to backflow for many hours. It is thus apparent that, when flow into the well stops, a pressure remains in the vicinity of an active input well which is substantially higher than the average reservoir pressure. This pressure will be called the *transient back pressure*, because it is a transient phenomenon. Its value is determined by shutting in a well and noting the pressure when water has ceased entering the well. It is found that the transient back pressure changes with time. If a well is operating at a constant well-head pressure and is suddenly shut in, the shut-in pressure falls—rapidly at first and then more slowly—hours, or even days, elapsing before the pressure has declined to zero at the well head. If the pressure readings are plotted against time, the "pressure falloff" curve generally approximates a straight line on double logarithmic paper, which is evidence of an exponential relation. For any particular well the slope of the curve is the same, regardless of the previous operating pressure, but it flattens slowly during the fillup period as the cumulative quantity of water injected increases.

Figure 5 and Figure 6 are examples of pressure-falloff curves taken at different times on two wells. Well 054 (Figure 5) had 9 feet of sand of average permeability of 165 millidarcys which was shot with 13 quarts of nitroglycerin. On December 30, the well had taken 7183 barrels of water; on March 17, it had taken 9196 barrels; and on June 28, it had taken 11,725 barrels. The latter amount was sufficient to produce interference with the water from the neighboring input wells. The gradual flattening of the curves is noticeable. Figure 6 shows the falloff curves of another well approximately similar in sand characteristics in the same flood. This curve is abnormally steep, and there is other evidence to indicate that a thief sand is present in which the back pressure falls more rapidly than in the pay sand proper.

The transient back pressures are, as yet, not fully understood, but the following tentative explanation is suggested by the authors. Water enters a well because the pressure is greater in the well than in the reservoir, and continues to flow through the sand by reason of a pressure gradient established therein. This gradient determines, for a particular well, the rate of flow that will take place at any given pressure. It is defined by Muskat's equations (greatest near the well), and decreases with distance to the pressured radius, beyond which it is zero. Muskat's equations are based on the assumption that water is incompressible, which is very nearly true. How-

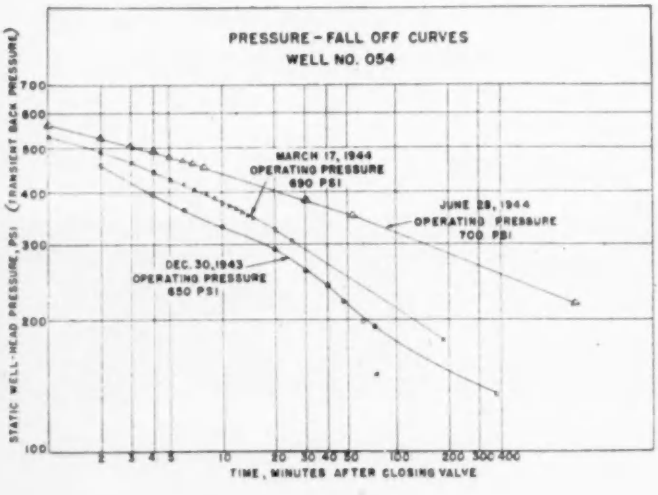

Figure 5. Pressure-fall o'f curves, Well 054 (Clintonville, Penn.).

Prepared as a study sponsored jointly by the American Petroleum Institute Topical Committee on Production Technology and the Institute's Subcommittee on Secondary Recovery Methods.

Presented before the American Petroleum Institute Division of Production at the Twenty-Fifth Annual Meeting, Chicago, Illinois, November 15, 1945.

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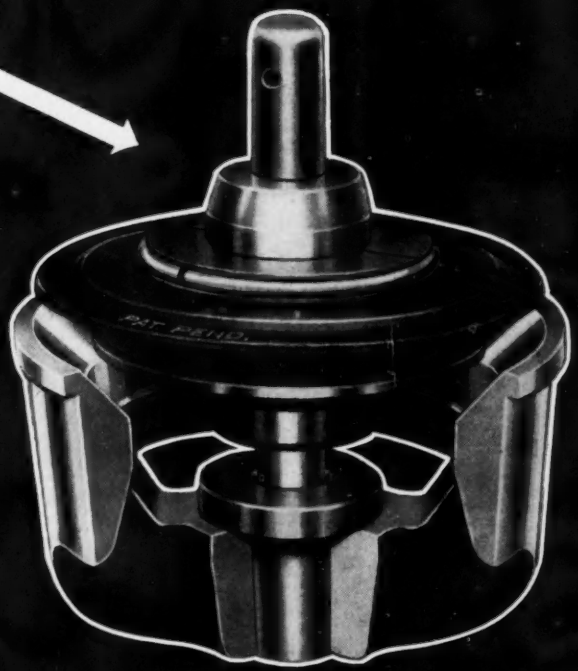

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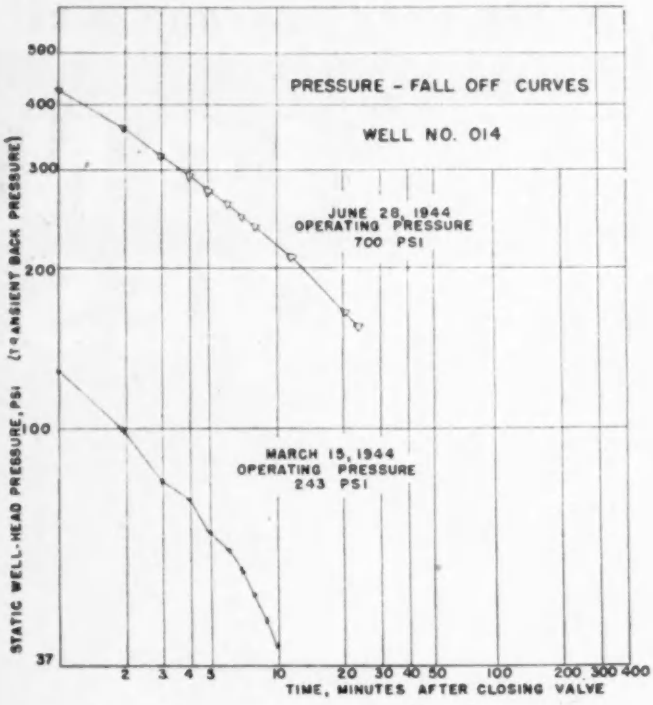

Figure 6. Pressure-fall off curves, Well 014 (Clintonville, Penn.).

ever, the compressibility of water certainly accounts for some of the back pressure, and a little gas may be present even in a watered-out sand. The volume of free gas in the reservoir is difficult to estimate, but even a small amount (comprising a saturation of less than 1 percent) would prevent the system from behaving as if it were filled with an incompressible fluid. Speculation indicates that the gas saturation is probably minimum close to the hole where the water is moving most rapidly, and has the best chance to dissolve the gas. Near the well, the pressures are maximum, and the gas is compressed to its smallest volume. The presence of a small quantity of free gas in the sand does not invalidate the definition of the pressure gradient by the equations (except for a probably negligible change in effective permeability to water).

Comparatively small quantities of free gas in the sand, however, will explain the transient back pressure. When the input well is shut in, the pressures in the sand start to drop immediately—permitting the gas to expand; and further decrease in pressure is possible only to the extent that the water front continues to advance—making space available into which the gas can expand. Thus the pressure gradient in the sand does not disappear immediately when the water is shut off, as it would if the system were filled with a totally incompressible fluid; but it is maintained by the expanding gas bubbles. As the water front advances, the gradient becomes less and less steep, the rate of movement of the water becomes progressively slower, and the transient back pressure declines more and more slowly. The elasticity of the formation and the small but measurable compressibility of the liquids have an effect similar to that of the compressibility of the gas, and doubtless also contribute to the phenomenon.

When a well is taking water at a steady rate, a sudden increase in pressure will cause an increase in intake rate. This effect is illustrated in Figure 7 which shows the decrease of intake rate with time of a well in the Bradford field. The well was shut in for about 12 hours, at the end of which time it had a transient back pressure of 300 pounds per square inch at the well head. Full line pressure of 820 pounds per square inch was gradually applied over a period of 15 minutes. The intake rate during the first half hour was too high to read on the recording orifice meter used in the experiment. It then declined in a manner similar to that described as characteristic of a new well. The decline in intake rate as increasing volumes of water are injected is caused by the increase of the radius around the well

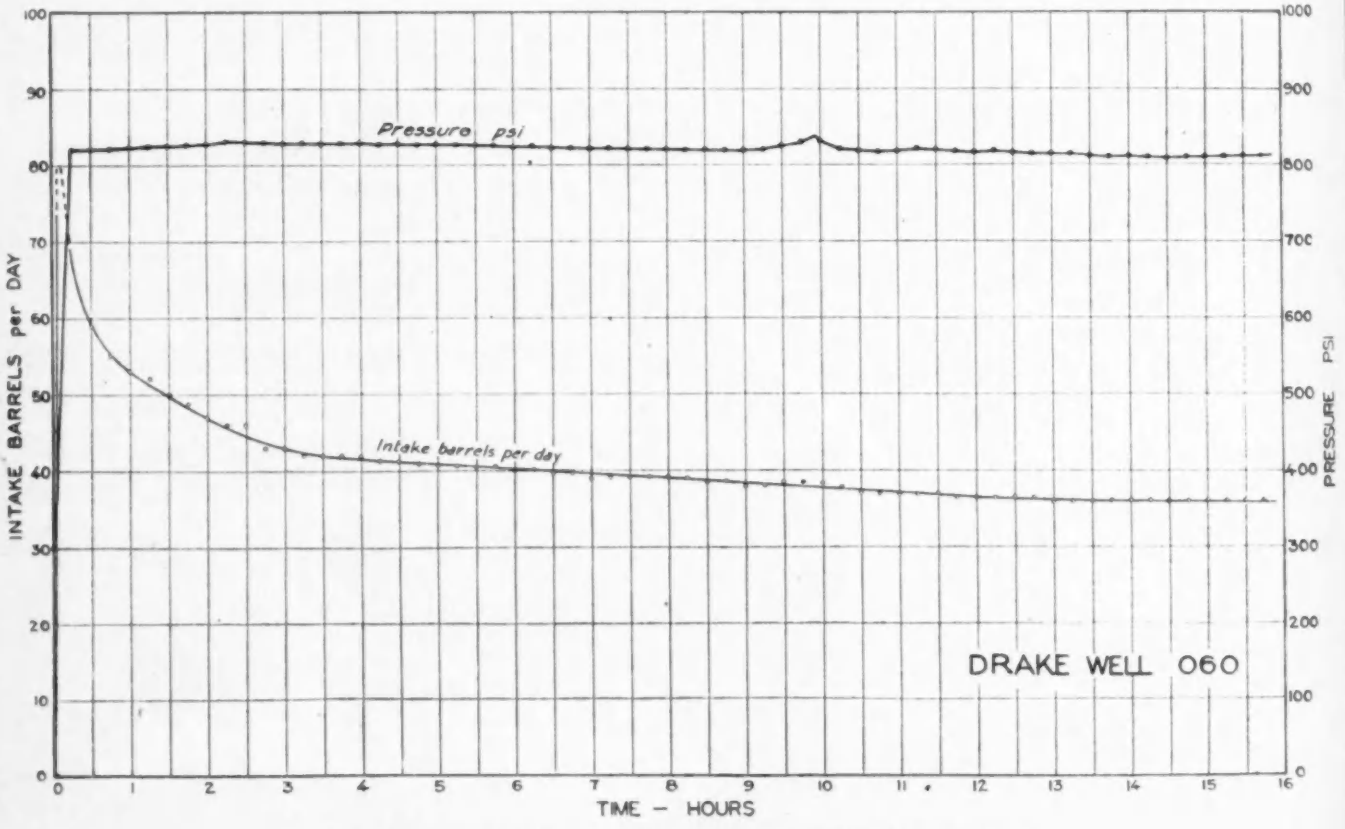

Figure 7. Decrease in intake rate with time of well, Drake 060 (Bradford, Penn.).

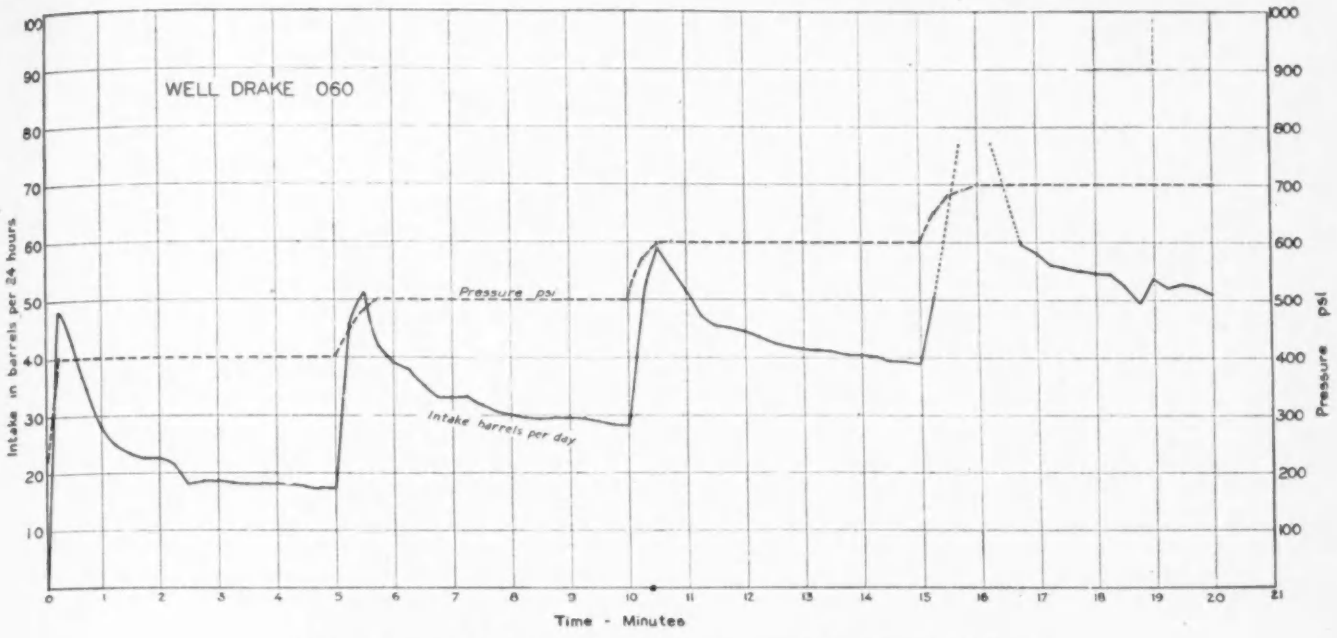

Figure 8. Changes in intake rate with changes in pressure, Drake 060 (Bradford, Penn.).

(r_e) through which the pressure gradient has become established. The enlargement of the radius results in a continually decreasing series of pressure gradients. As more and more water is injected, it has a smaller effect on increasing the radius (which varies as the square root of the cumulative fillup volume); and, as the radius increases, it has a smaller effect on the intake rate (which varies inversely as the logarithm of the radius). The same effect takes place when the well pressure is suddenly lowered. A sudden drop in pressure will cause a sudden drop in flow, in some cases to zero or even negative (backflow), which gradually increases as the effective transient back pressure dissipates, until it attains a new equilibrium rate.

Determination of Localized Injectivity Index: It is believed that the best way to determine the localized injectivity index of an injection well is as follows:

The well is shut in tightly until the transient back pressure is falling very slowly. It may then be presumed that there is little or no flow of fluids in the sand in the vicinity of the well, and the pressure gradient which existed about the well when it was active has become flat for a considerable distance from the well. In other words, the pressures in the sand near the well have become equalized; this waiting period takes several hours.

The valve is now opened, and the pressure is maintained as steady as possible for a short period of time, say 5 minutes. The volume injected during the period is then noted or, better, the instantaneous intake rate at the end of the period is recorded. The pressure is then raised in equal increments, say of 100 pounds per square inch, and the intake rates at the ends of equal time periods are measured. Sufficient readings should be taken to establish a relation between the intake rate in barrels per day and the pressure in pounds per square inch.

The curve of intake rate plotted against pressure is found to be a straight line up to pressures slightly above the weight of the overburden above the packer at the top of the sand. At higher pressures the slope of the line sometimes increases because of rupture of the formations; this phenomenon will be discussed later. The slope of the line is the localized injectivity index; i.e. $\frac{\text{change in intake rate}}{\text{change in pressure}}$. In taking tests in the manner described previously herein, it is found that the shut-in pressure immediately before starting the test is the x intercept of the pressure-input curve; i.e., the pressure at which the well neither takes nor discharges water.

When the pressure on the well head is suddenly increased, the intake rate increases very greatly; and, as the new gradient becomes established, the rate falls rapidly at first and then more slowly. This is illustrated in Figure 8 which shows the instantaneous changes in intake rate (measured with a recording orifice meter) with pressure, when the pressure was increased stepwise in equal increments. The rate during the first few seconds was too large to measure. The rates at the end of the first minute at the new pressure were always substantially higher than the rates at the end of the second minute or the fifth minute. However, the changes in intake rate at the end of any given period per unit change in pressure were substantially the same. This is shown in Figure 9, which shows the rates at the end of the first minute and also the rates at the end of the second and the fifth minute, plotted against the corresponding pressures. The slope of these lines is the change in rate per pound per square inch change in pressure, which is the localized injectivity index. As the three curves have essentially the same slope, it may be seen that the localized injectivity index can be reliably determined in spite of the rapid variation in absolute intake rates.

A few days after the test shown in Figure 8, the well was treated with acid, during the course of which treatment it was back-flowed, shut in for six days and flushed out, during which time it was back-flowed again. The first day after the application of pressure, the well was taking water at the rate of

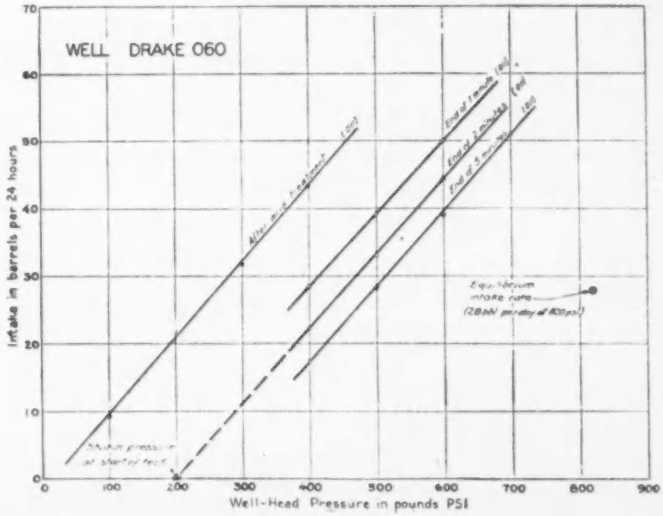

Figure 9. Pressure-input tests of Drake 060 (Bradford, Penn.)

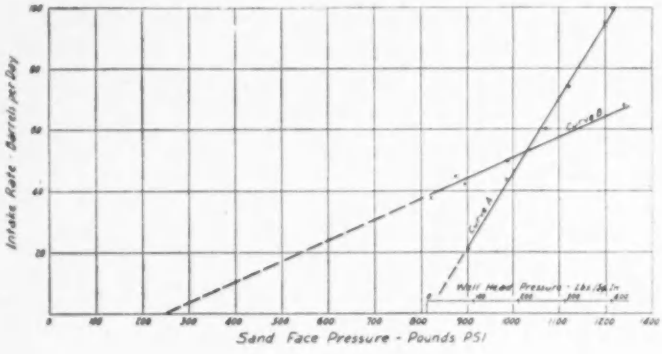

Figure 10. Pressure-input tests of Well 028 (Bradford, Penn.)

Curve A, pressure increased in 10-minute intervals.

Curve B, pressure increased in 24-hour intervals.

150 barrels per day, which was five times its normal intake rate. A localized injectivity-index test was run (Figure 9) which showed no change in slope, indicating that the greatly increased intake rate was ascribable solely to the decrease in reservoir pressure—resulting from the back-flowing and shut-in period, and not to any beneficial effect of the acid. This deduction was confirmed six days later when the intake rate had decreased to its previous rate of 30 barrels per day. Although good results were not obtained in the case of this well, acid treatment has resulted in great improvement in the intake rate of old wells.

The intake rate at different pressures might be determined after longer periods of time, so that equilibrium conditions throughout the reservoir were established between tests. The slope of the curve would then indicate: not the localized injectivity index (or conductivity of the immediate vicinity) of the input well alone, as defined previously, but, rather, the conductivity of the whole system surrounding the well—which is substantially affected by the productivity indices of the adjoining producing wells. This pattern conductivity is the equivalent of the injectivity index as defined herein. A curve of intake rate vs. pressure taken in this manner would be flatter (because of the lower conductivity); and the x intercept, i.e., the pressure at which the well takes no water, would be the static reservoir pressure of the formation.

Figure 10 compares the slopes of the "intake rate vs. pressure" curves taken at short intervals (10 minutes) and longer intervals (24 hours) on the same well. It will be seen that the slope at the loger intervals is flatter, and the x intercept is about 250 pounds per square inch sand-face pressure. The average reservoir pressure is not known, but it is probably not very different from this pressure.

Mathematical Expression of Localized Injectivity Index: After the well has been shut in and the pressures equalized in the neighborhood of the well, it then behaves (on resuming water injection) as a single well until the outer limit (r_e) of the new pressure gradient encroaches on the area where the pressures are not equalized. It, therefore, starts out taking water at a high rate, like a new well—except that, because the gas space to fill up is very small, the radius (r_e) encroaches more rapidly, and a condition of interference is reached in a matter of a few hours. Therefore, the single-well flow formula is applicable for a limited period of time.

The intake rate Q is given by:

$$Q = \frac{2\pi kh\,(p_w - p_1)}{\mu \log_e \frac{r_1}{r_w}} \qquad (9)$$

In this expression p_1 is the transient back pressure and r_1 is the distance out from the well to which the pressures are equalized at the value p_1.

Differentiating, the localized injectivity index, which is the change in intake rate with changes in pressure (p_1 being constant), will be:

$$\frac{dQ}{dp_w} = \frac{2\pi kh}{\mu}\left(\frac{1}{\log_e \frac{r_1}{r_w}}\right) \qquad (10)$$

Experimentally, it has been found that, for small volumes of water injected, $\frac{dQ}{dp_w}$ is constant, as shown in Figures 9 and 10. It is thus necessary to conclude that, if only small volumes of water are injected during the course of the test, r_1 changes only slightly and, therefore, as r_1 is considerably greater than r_w, the logarithm of $\frac{r_1}{r_w}$ is practically constant.

If, however, larger volumes were injected during the course of the test, $\log_e \frac{r_1}{r_w}$ would no longer be constant and, therefore, the localized injectivity index $\frac{dQ}{dp_w}$ would no longer be constant. If large enough volumes are injected, so that equilibrium conditions are attained, the corresponding pattern formula is applicable. In the case of the 5-spot, conductivity (change in intake rate for change in pressure) would be:

$$\frac{dQ}{dp_w} = \frac{\pi kh}{\log_e \frac{D}{r_w} - 0.619} \qquad (11)$$

As $\frac{D}{r_w}$ is constant, the conductivity is always constant (Figure 10, curve **B**).

Figure 11 shows pressure-input tests made on the same well whose pressure-falloff curves were shown in Figure 5 at two different dates. The localized injectivity index on June 28 was exactly the same as on December 30. The reservoir had filled considerably during this period, and the transient back pressure was greater at the start of the second test than at the start of the first. As a result the x intercept of the curve, when no water enters the well, is higher in the second curve; and, for any given pressure, less water was injected.

It should be noted here that the transient back pressures affect the determination of productivity index as well, and they should be given consideration by those concerned mainly with primary production. A special case of this, which is of interest to those engaged in water flooding, concerns the comparison of flowing and pumping water-flood oil production. If a producing well which has previously been allowed to flow its production is put to pumping, it takes a long period of time for the pressure gradient to readjust itself to the lower sand-face pressure, during which time the rate of production continually decreases. When a well has been pumping, and is put to flowing, it will take a long time for the pressure about the well to build up, during which time the production will continually increase. Many comparisons between flowing and pumping production rates may have been misleading because of this effect.

When it is desired to compare injectivity indices of two different wells, it is convenient to divide the injectivity index by the sand thickness. This is then called the *specific injectivity index*. In the illustrations herein, **I.I.** signifies injectivity index, and **S.I.I.** specific injectivity index.

(To be continued.)

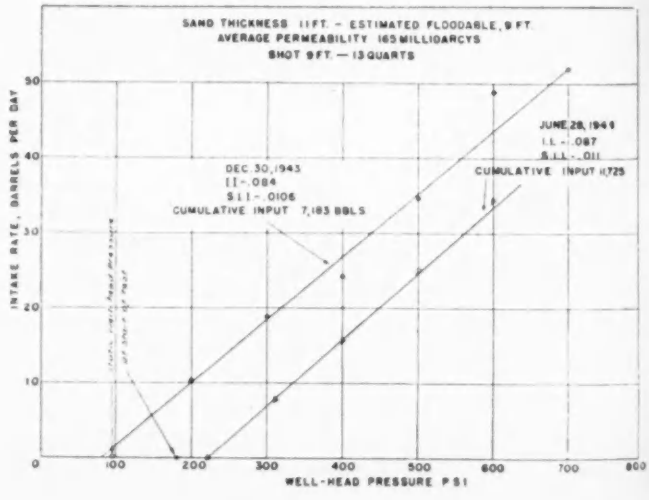
SAND THICKNESS 11 FT. - ESTIMATED FLOODABLE, 9 FT.
AVERAGE PERMEABILITY 165 MILLIDARCYS
SHOT 9 FT. — 13 QUARTS
JUNE 28, 1944
I.I. - .087
S.I.I. - .011
DEC. 30, 1943
I.I. - .084
S.I.I. - .0106
CUMULATIVE INPUT 7,183 BBLS
CUMULATIVE INPUT 11,725
INTAKE RATE, BARRELS PER DAY
WELL-HEAD PRESSURE P.S.I.

Figure 11. Pressure-input tests of Well 054 (Clintonville, Penn.).

BIBLIOGRAPHY

[6] "Productivity index: the number of barrels per day of gross liquid produced from a well per pound per square inch pressure differential between well and formation, referred to as a specified subsurface datum, usually the mean formation depth," API Tentative Glossary of Terms Relating to Reservoir Behavior, *Proc. API* **22 [IV]** *(Production Bull. No. 228)* 92 (1941).

[7] "Glossary Relating to Reservoir Behavior —A Report of the California District Topical Committee on Production Technology of the American Petroleum Institute," Nov. 8 (1942).

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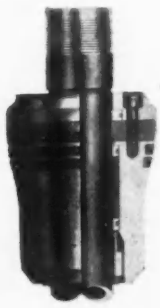

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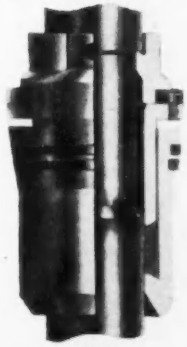
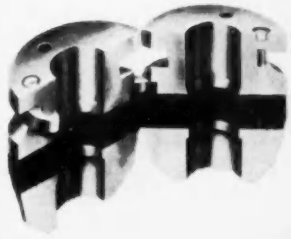


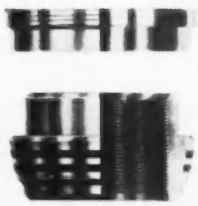
ASTM

Permits running and landing of tubing through assembled christmas tree. This hanger is designed to permit any method of well completion.



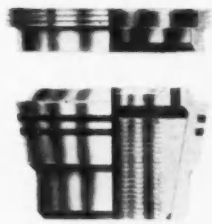
ALK

Used in completions where a polish joint hanger would otherwise be applied, this hanger eliminates the polish joint, since a seal can be effected on any joint of tubing. It can also be used as a blowout preventer.



LHCH

Threaded mandrel hanger permits landing of casing through preventers and is satisfactory where close spacing of pipe is not necessary.



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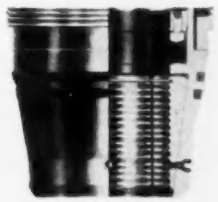

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Summary of Results of Exploratory Drilling

ITEM	Oct., 1945	Sept., 1945	10 Months: JAN.-OCT. 1945	1944	Percent Diff.
Oil Discoveries	31	45	388	376	+ 3.2
New Fields	21	34	276	260	+ 6.2
New Pays	10	11	112	116	— 3.4
Distillate Discoveries	2	3	34	33	+ 3.0
New Fields	1	2	26	24	+ 8.3
New Pays	1	1	8	9	— 11.1
Gas Discoveries	14	10	98	101	— 3.0
New Fields	14	10	86	88	— 2.3
New Pays	.....	.....	12	13	— 7.7
Total Discoveries	47	58	520	510	+ 2.0
Extensions to Fields	9	16	139	149	— 6.7
Oil Fields	8	14	110	114	— 3.5
Distillate Fields	1	.....	8	9	— 11.1
Gas Fields	.....	2	21	26	— 19.2
Total Prod. Tests	56	74	659	659	.....
Dry Holes	348	272	2,992	2,924	+ 2.3
(Weekly Average)	69.6	68.0	68.0	66.5	+ 2.3
Wildcats	340	268	2,922	2,839	+ 2.9
New Pays	7	1	38	17	+123.5
Outposts	1	3	32	68	— 52.9
Total Expl'tory Tests	404	346	3,651	3,583	+ 1.9
(Weekly Average)	80.8	86.5	83.0	81.5	+ 1.9
Percent Productive (Weekly Average)	13.9	21.4	18.1	18.4	.....
Percent Dry (Weekly Average)	86.1	78.6	81.9	81.6	.....

Dry hole completions are from weekly reports and totals represent completions for 5 weeks in October, 1945; 4 weeks in September, 1945; 44 weeks in Jan-Oct., 1945; 44 weeks in Jan.-Oct., 1944.

Exploratory Drilling Declines in October

EXPLORATORY drilling showed some let-up in October, as completions in that category averaged 80.8 per week compared with 86.5 weekly in September and 85 weekly in August. The decline was in line with a slight slowing down of drilling in general.

While the volume of exploratory completions was off, the ratio of successful tests among the wells completed also was below normal. Among the month's exploratory completions, only 13.9 percent yielded production, whereas the ratio had been 21.4 percent productive in September and 15.3 percent in August. For the first 10 months of this year, 18.1 percent of the completions have been productive and in the corresponding months last year the ratio was 18.4 percent.

Although some companies hope to fulfill their programs of wildcatting this year, it appears that the industry as a whole will not do so. Compared with approximately 4300 wildcats completed last year, the goal for the industry, as set up by the Petroleum Administration for War, was 5000 completions. But for the ten months, January-October, there was only a 1.9 percent increase over last year, with completions totaling 3651 against 3583.

For a large part of this year, numerous

■ CONTINUED ON PAGE 58
ALSO SEE TABLES ON PAGES 56-57

Results of Exploratory Drilling in October and First 10 Months, 1945-1944, By Districts

State or District	OCTOBER, 1945													FIRST TEN MONTHS, 1945															
	Productive Tests									Unproductive Tests			Total Exploratory Tests	Productive Tests									Unproductive Tests				Total Exploratory Tests	
	New Fields			New Pays			Extensions			Total Productive				New Fields			New Pays			Extensions			Total Productive		Unproductive Tests			Total Dry			
	Oil	Gas	Dis.	Oil	Gas	Dis.	Oil	Gas	Dis.		Wildcats	New Pays	Outposts		Oil	Gas	Dis.	Oil	Gas	Dis.	Oil	Gas	Dis.	10 Mo. 1945	10 Mo. 1944	Wildcats	New Pays	Outposts	10 Mo. 1945	10 Mo. 1944	10 Mo. 1945	10 Mo. 1944
Alabama											3			3		1								1	3	18			18	17	19	20
Arizona																													6		6
Arkansas											5			5	1									1	8	32	1	1	34	57	35	65
California											35			35	5			3			3	1		12	30	243		2	245	224	257	254
Colorado											3			3							1			1	5	8			8	5	9	10
Florida											1			1												11			11	3	11	3
Georgia																										6			6	8	6	8
Illinois	2			3			4			9	23			32	22			25			34	5		86	73	321			321	301	407	374
Indiana											3			3	3	1		2			2			8	10	78			78	52	86	62
Iowa																										1			1	2	1	2
Kansas	7	2		3			1			13	31			44	45	11		8			14	4		82	59	273			273	362	355	421
Kentucky											15			15	8	1		1			2			12	26	80			80	101	92	127
Louisiana		2	1	1			1		1	6	9			15	19	6	1	14		4	4	1	3	52	35	110		3	113	111	165	146
North Louisiana		2	1						1	4	6			10	6	6	1	1			2	1	1	18	10	65		2	67	71	85	81
South Louisiana				1			1			2	3			5	13			13		4	2		2	34	25	45		1	46	40	80	65
Michigan	2	1								3	26	1	1	31	14	3		3	2		1			23	16	196	3	6	205	184	228	200
Mississippi											13			13	1	1	2				5			9	4	105			105	72	114	76
Missouri											3			3								1		1		20			20	6	21	6
Montana											6			6	2						2			4	5	16			16	26	20	31
Nebraska																										3			3	8	3	8
New Mexico											8			8	2	1		3	1		1			8	9	56	2	1	59	43	67	52
North Carolina																										1			1		1	
Ohio		2								2	8			10		14		1	1		1	7		24	41	54			54	64	78	105
Oklahoma	3	3		1						7	25			32	53	15	3	10	4		14	1		100	66	259			259	195	359	261
South Dakota											1			1												1			1		1	
Tennessee																										2			2	4	2	4
Texas	7	4		2		1	2			16	117	6		139	98	32	20	42	4	4	24	1	5	230	252	1007	32	16	1055	1054	1285	1306
E. Texas Border	1	3								4	4			8	1	4	3							8	5	17			17	13	25	18
Rest of East Texas				1		1				2	6	1		9	2	3		1	1	3				10	13	56	4	2	62	94	72	107
North Texas	3									3	29	2		34	26	1		12	1		5			45	53	249	6	1	256	248	301	301
West Central	1									1	9			10	13	4		4						21	18	103	4		107	99	128	117
West Texas	1						1			2	21	3		26	19			9			13			41	40	169	13	8	190	154	231	194
Panhandle											2			2												8	1		9	7	9	7
Upper Gulf Coast				1			1			2	13			15	12	5	9	13		1	6		3	49	30	116	4	3	123	112	172	142
Lower Gulf Coast	1	1								2	14			16	17	11	7	1	2			1	2	41	62	145			145	155	186	217
Southwest											11			11	6	3	1	2						12	27	100		1	101	123	113	150
South Central											8			8	2	1								3	4	44		1	45	49	48	53
Utah																													1		1
Washington																										1			1	1		
West Virginia																									2			2			4
Wyoming											5			5	3						2			5	15	20		3	23	16	28	31
Total U. S.	21	14	1	10		1	8		1	56	340	7	1	404	276	86	26	112	12	8	110	21	8	659	659	2922	38	32	2992	2924	3651	3583

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New Oil and Gas Fields and New Pay Horizons Discovered in the United States in October, 1945

Also Important Extensions to Established Fields

COUNTY	FIELD	COMPANY, WELL AND LOCATION	Date Spudded	Date Completed	Total Depth (Feet)	Completion Horizon (Feet)	[1]Name, Character and Age of Producing Formation	[2]Initial Production: Method and Choke	Gravity of Oil	[3]Structure: [4]Method of Discovery	Tentative Evaluation of Discovery or Extension (Opinion of relative importance, from general viewpoint of industry, based on pertinent but incomplete data. Later development or more complete data may require revision.)
		ILLINOIS—New Oil Fields									
Richland	Gallagher	Pure's J. C. Howard Al, nw nw sw 13-2n-9e	8-26-45	10-16-45	3243	3167-	McClosky li; Miss	P 96, 81 wtr	....	.....	1¾ mi sw of Calhoun pool.
Richland	N. Parkersburg	Central Pipe Line's Lee Bunn 1, ne sw sw 28-3n-14w	9- 2-45	10-30-45	3132	3087- 3093	McClosky sd; Miss	P 48, 30 wtr	....	.....	1¾ mi nw Bonpas pool; 2½ mi n Parkersburg Consol. pool.
		ILLINOIS—New Oil Pays									
Clay	Stanford	Pure-Lynn's E. F. Thompson Al, w nw se 24-3n-7e	10- 5-45	10-30-45	3085	3039- 3041 3065-	Rosiclare li; Miss McClosky li; Miss	P 245	....	.....	Disc well comp as McClosky; 2nd and 3rd wells in pool. Comp as dual prod in McClosky and Rosiclare.
Wabash	Cowling	Ill. Prod.'s E. Schmidt 1, sw sw ne 26-2s-14w	8-25-45	10-23-45	2871	2862- 2868	Rosiclare li; Miss	P 30, 42 wtr	....	.....	Closest prod fr Cypress sd, but McClosky li prod also in pool.
White	Phillipstown Consol.	Johnson's S. Fieber 1, ne nw nw 25-4s-10e	9- 9-45	10-30-45	3052	3011- 3016	Lower O'Hara li; Miss	P 25, 10 wtr	....	.....	Dual comp in L. O'Hara and Rosicalre. Lower O'Hara li is 15th pay disc in pool.
		ILLINOIS—Oil Field Extensions									
Clay	Clay City Consol.	Pure's Broyles Consol.'s B1, nw ne se, 14-2n-7e	8-20-45	10- 9-45	3077	2954- 2964	Aux Vases sd; Miss	P 12	....	.....	¾ mi extension to pool.
Coles	Mattoon	Dirickson's Linder-Pinnell 1, ne se nw, 27-12n-7e	9-21-45	10-23-45	2007	1996-	Aux Vases sd; Miss	P 209	....	.....	1 mi w extension. Most active area in state at present.
Jasper	N. Boos	Pure's Bergbower Consol. D1, n sw ne 4-6n-10e	9-21-45	10-16-45	2810	2770-	McClosky li; Miss	P 231	....	.....	Abt 1 mi ne extension to N. Boos; 1 mi s Willow Hill pool.
Wayne	Cisne	Pure's C. A. Billington 2, n nw se 23-1n-7e	9-11-45	10-23-45	3188	3152-	McClosky li; Miss	P 42, 53 wtr	....	.....	½ mi e extension to pool.
		KANSAS—New Oil Fields									
Barton	N. Beaver	C. Elmer Ash's Reimann 1, se se nw 27-16s-12w, abt 1 mi nw Kraft-Prusa pl	.....	10- 1-45	3363	3352- 3363	Arbuckle li; Cam	Sw 360	38	Str, trp; dr	Further development may link this disc with big Kraft-Prusa fld.
Butler	.....	Ed Adair's Eaton 1, nw nw se 22-25s-4e, abt 1 mi n of Albert pool	.....	10-18-45	2590	2565- 2590	Mississippi li; Miss	P 250	45	Ant; sub	Fairly important; may link with Albert pool; recovery est between 5000 and 7000 bbls per acre.
Butler	.....	K. T. Weideman's Hoard 1, ne ne sw 28-29s-8e, abt 6 mi se Latham	.....	10- 7-45	2844	2808- 2812	Mississippi li; Miss	P 25	....	Str, trp; dr	Unimportant.
Cowley	.....	B. B. Blair's Waldschmidt 1, nw nw sw 5-34s-6e, abt 1½ mi ne Robn pool	.....	10-10-45	2885	2855- 2885	Bartlesville sd; Penn	Sw 70	....	Ant, sub; dr	Undetermined; interesting due to increased activity in Cowley County.
Ellis	.....	Phil-Hanoil Co.'s Nicholson 1, se se nw 30-11s-20w, abt 7½ mi n Ellis	.....	10-25-45	3853	3843- 3853	Arbuckle li; Cam	Sw 120	38	Str, trp; dr	Fairly good strike; well checks 21 ft higher than dry hole to w. Probably prod acreage may cover a sect.
McPherson	.....	Sharon Drilling Co.'s Crowthers 1, nw sw nw 24-18s-1w, 1½ mi ne N. Canton pool.	.....	10- 3-45	2834	2816- 2834	Mississippi li; Miss	P 30	....	Ant; sub	Unimportant.
Rooks	.....	Keyes Drilling Co.'s Neil 1, ne ne 20-9s-20w, abt 7 mi s-s Barry pool	.....	10-16-45	3865	3848- 3865	Arbuckle li; Cam	P 203	38	Str, trp; dr	Arbuckle has good saturation, porosity; fairly important; est recovery abt 8000 bbls per acre; extent of prod horizon not indicated.
		KANSAS—New Gas Fields									
Clark	.....	Helmerich-Payne, Inc.'s Peter Estate 1, nw nw se 3-31s-21w, abt 5½ mi n Lexington.	.....	10-22-45	5196	5172- 5196	Mississippi li; Miss	F 6 mln	....	Str, trp; dr, seis	Apparently opens important gas area; good porosity, pressure. Drlng only can determine extent of new fld as geological data furnishes little control.
McPherson	.....	J. M. Huber Corp.'s Stevenson 1, nw ne se 14-20s-2w, abt 1 mi s Elitz-Canton pool.	.....	10- 3-45	2968	2951- 2968	Lansing li; Penn	F 1 mln	....	Ant; sub	Unimportant.
		KANSAS—New Oil Pays									
Barton	Beaver	Martin-Hearing's Kultgen 1, ne se nw 16-16s-12w	.....	10-24-45	3101	3090- 3101	Lansing li; Penn	P 10, 5 wtr	....	Ant; dr	Unimportant.
Ellis	N. W. Catherine	Ashland Oil & Ref. Co.'s Schmidt 1, sw sw se 33-12s-17w	.....	10-30-45	3522	3512- 3522	Lansing li; Penn	P 215, 50 wtr	....	Ant; dr	Fld has 2 other comp in Arbuckle; Lansing may prove erratic.
Sumner	Churchill	Shell's Churchill 12, ese sw 25-31s-2e	.....	10-16-45	2657	2634- 2657	Arbuckle li; Cam	P 240	....	Ant; dr	Shell owns all 58 prod in fld; deeper dr campaign anticipated.
		KANSAS—Oil Field Extension									
Sedgwick	Greenwich	J. P. Gaty's Stollie 1, se se sw 22-26s-2e, 1 mi s Greenwich pool	.....	10-19-45	2910	2896- 2910	Mississippi li; Miss	P 210	....	Ant; dr	Proves 640 acres s of Greenwich pool.
		NORTH LOUISIANA—New Distillate Field									
Lincoln	.....	California Co.'s M. H. Nobles 1, 12-19n-4w, Hico prospect	5- 1-45	9-27-45	9137	8700- 8750	Cotton Valley sd; Jur	F 195; ¼" & 7/16"	55	.....	Good show oil in Travis Peak.
		NORTH LOUISIANA—New Gas Fields									
Claiborne	E. Haynesville	Hunt Oil Co.'s W. T. Owens 1, 15-23n-7w	5-15-45	10-25-45	5520	4140- 4150	Cotton Valley sd; Jur	F 2 mln; 3/8"	....	.....	Show of 40.3-gr oil in Gloyd, some salt water encroachment indicated.
De Soto	.....	Chas. C. Lowery's Tanner 1, 13-10n-11w, w of Ajax prod	7-24-45	10-22-45	3305	3120- 3140	Paluxy sd; L. Cre	F 4 mln; 3/8"	....	.....	2nd show of gas and dist logged in Paluxy sd fr 3215-3245 ft.
		NORTH LOUISIANA—Distillate Field Extension									
Bossier	Benton	Barnsdall-Sohio's Padgett-Bundy 1, c nw se 17-20n-12w	6-25-45	10-20-45	9307	8070- 8182	Cotton Valley "D" sd; Jur	F 333, 6 mln; 22/64"	....	.....	Extends fld 1½ mi se of discovery.
		SOUTH LOUISIANA—New Oil Pay									
Iberia	Avery Island	Humble's C. G. Hooks 1, start sec w½ sect 23 go nly alg el w½ 1547 th wly at ra 330 to len in 23-13s-5e.	5- 9-45	10-14-45	11995	11870-11885	Frio sd; Olig	F 421; 5/32"	47	D; rfl	Gives fld deeper pay sand. Fld developing into multi-sand pool of much importance.
		SOUTH LOUISIANA—Oil Field Extension									
Lafayette	N. Cankton	Shell's F. A. Broussard 1, 389.1.2 s 1° 15 mins w 450 s 88° 45 mins e of nwc 65-8s-4e, e of prod.	8- 4-45	10-17-45	11155	10640-10655	Frio sd; Olig	F 560; 4/64"	35.4	D; rfl	Sd just below 11,000 ft showed gas and cond. New sd for fld.

Lafayette	N. Cankton	**SOUTH LOUISIANA—Oil Field Extension** Shell's F. A. Broussard 1, 389.2 s 1° 15 mins w 450 s 88° 45 mins e of nwc 65-8s-4e, e of prod.	8- 4-45	10-17-45	11155	10640-10655	Frio sd; Olig	F 560; 4/64"	35.4	D; rfl	Sd just below 11,000 ft showed gas and cond. New sd for fld.
		MICHIGAN—New Oil Fields									
Bay	Bangor	Gulf's Douviec 1, n½ nw ne 9-14n-5e, 2 mi e Kawkawlin fld	9- 1-45	10- 9-45	2924	2850- 2919	Dundee dolo & li; Dev	P 17, 5 wtr	....	Ant; geol	
Roscommon	Roscommon	E. V. Hilliard's State 1D, e½ se se 19-21n-3w, 2 mi nw Headquarters fld	7- 5-45	10- 1-45	3183	3165- 3175	Traverse li; Dev	F 35	....	Ant; geol	
		MICHIGAN—New Gas Field									
Mecosta	Morton	Chapman Oil Co.-West Mich. Consumers Co.'s Minkel 1, s½ sw sw 7-14n-8w, 1 mi e Austin fld.	8-13-45	10- 2-45	1328	1324- 1328	Stray sd & li; Miss	F 2.8 mln	....	.....	
		OHIO—New Gas Fields									
Medina	.....	H. C. Bishop's Razor-Seiberling 1, lot 2, Wadsworth twp	.....	10- -45	3721	3669- 3675	Clinton sd; Sil	F 0.115 mln	....	.....	
Richland	.....	Ohio Fuel's D. R. Culler 1, sect 3, Monroe twp	.....	10- -45	2642	2628- 2635	Clinton sd; Sil	F 0.962 mln	....	.....	
		OKLAHOMA—New Oil Fields									
Garvin	N. E. Butterly	Continental's Butterly 1, nw sw se 12-1n-1e, 2½ mi ne Butterly gas pool	.....	10- 5-45	4422	2629- 2632	Oil Creek sd; Penn	Sw 150	38	Ant; seis, sub	Fairly important; may cover a sect; prod heavy oil fr Simpson.
Major	Ringwood	Superior Oil Co. of Calif.'s Manning 1, ne ne nw 27-22n-10w, 2 mi sw Ringwood	.....	10-15-45	8270	6740- 6780	Prue sd; Penn	F 60	38	Ant; seis	1st commercial oil prod in Major County; important disc on Anadarko Basin trend.
Osage	.....	Wilcox Oil Co.'s Drummond 1, nw ne sw 18-26-8e, 3 mi sw Myers dist	.....	10-16-45	2328	2308- 2328	Prue sd; Penn	F 480	38	Ant; sub	Apparently prolific strike; est recovery abt 8000 bbls per acre.
		OKLAHOMA—New Gas Fields									
Kay	.....	C. L. Jenkin's Jueschke 1, ne nw sw 3-25n-2w, abt 2 mi w Thomas dist	.....	10-15-45	4432	4407- 4432	Mississippi li; Miss	F 1½ mln	....	Str, trp; dr	Not very important.
Okfuskee	.....	Deep Rock Oil Corp.'s Harjo 1, sw sw ne, 2½ mi sw Keaton area	.....	10-30-45	2511	2481- 2511	Booch sd; Penn	F 21 mln	....	Ant; seis	Important; may cover 2 or 3 sections.
Seminole	.....	W. J. Brown's Orwig 1, sw sw sw 34-8n-8e, abt 1 mi e Wewoka pool	.....	10-12-45	1252	1132- 1157	Calvin sd; Penn	F 2 mln	....	Flt ant; seis sub	Sand fairly porous; probably be long life but cover not too much acreage.
		OKLAHOMA—New Oil Pay									
Lincoln	Wilzetta	C. L. McMahon's Vlasak 1, ne nw 2-12n-5e	.....	10-10-45	4800	4440- 4480	Simpson sd; Ord	F 405	39	Ant; dr	Revives Wilzetta pool; prev prod fr Hunton li; deepening campaign now under way in fld.
		LOWER TEXAS GULF COAST—New Oil Field									
Bee	Theis	Tom Graham's Theis 1, 467 fr nw&ne 500-ac lse, R. S. Barnes sur	9- 2-45	9-17-45	3571	3571- 3582	Hockley sd; Eoc	F 105; 4/64"	....	.....	Immediate development planned. Humble enters area with 2 locations.
		LOWER TEXAS GULF COAST—New Gas Field									
Bee	S. Blanconia	S. Chamberlain's H. C. Wood 1, 467 fr n&el 200-ac lse, Jose Maria Casillo sur	8-14-45	9-25-45	5816	5230- 5245	Vicksburg sd; Olig	F no gge	....	Flt; seis	Unimportant.
		UPPER TEXAS GULF COAST—New Oil Pay									
Hardin	Saratoga	D. D. Feldman's S. F. Bashara 1, 1250 fr wl 950 fr sl 100-ac lse, J. B. Reaves sur	8- 5-45	10-13-45	6972	6550- 6570	Yegua sd; Eoc	F 395; 1/4"	34	D; sur	Deepest prod on flk of dome; may revive one of Texas Coast's oldest flds.
		UPPER TEXAS GULF COAST—Oil Field Extension									
Brazoria	Old Ocean	Magnolia-Abercrombie's Peter Studer 1, 1196.4 n 470 w of sec 102.9-ac lse and blk 1, S. F. Austin 7⅛ Lge.	7- 6-45	10-19-45	10957	10830-10850	Frio sd; Olig	F 295; 1/4"	46.5	D; rfl	Extends fld ¾ mi e.
		EAST TEXAS BORDER COUNTIES—New Oil Field									
Marion	.....	Jefferson Oil & Gasoline Co.'s J. M. DeWare 1, 130 fr sl 140-ac tr Upper Reuben Bennington Sur, 1½ mi n Jefferson.	6- 2-45	9-23-45	7500	6618-	Travis Peak sd; L. Cre	F 225; 1/8"	41.3	.....	Pettit sd carried slight stain of oil.
		EAST TEXAS BORDER COUNTIES—New Gas Fields									
Harrison	.....	Rogers Lacy's B. C. Quinn 1, Vashti Gibbs sur, 70-ac tr, 1 mi w Harleton, 1 mi s Whalen Bros.' Rodessa gas-dist disc.	6-30-45	9-15-45	6821	6731- 6764	Young sd; L. Cre	F 60 mln	....	.....	Had show of wet gas in Rodessa.
Panola	.....	J. I. Roberts-C. H. Murphy's E. Johnson 1, Messer Fain Sur, 1½ mi n Midyett	7-25-45	10- 6-45	5300	6094- 6110 6168- 6184	Lower Pettit sd; L. Cre	F 13.5 mln 1 mln	....	.....	
Panola	.....	Skelly's Lewis Werner Sawmill Co. 2, Hampton Andreson Sur, sw Deadwood	4-30-45	9-28-45	6404	5760- 5776 6052- 6060 6132- 6148	Upper Pettit sd; L. Cre Lower Pettit sd; L. Cre	F 1.118 mln F 17.116 mln	....	.....	
		EAST TEXAS—New Oil Pay									
Cherokee	Lone Star	G. L. Walker-Wm. H. Foster's P. I. Bowling-Pure 1, 1363 ewl, 660 snl of 260-ac tr, Wade H. Walters sur, ¾ mi w by n and across flt fr Woodbine prod.	7-12-44	10-26-45	8370	3348- 3364	Navarro ch; U. Cre	P&F 170	41	Flt; geol	Probably involves migratory oil up flt plane fr near by Woodbine prod area. Prod test of Rodessa perf at 7340-7348 ft yielded nominal show oil and gas.
		EAST TEXAS—New Distillate Pay									
Wood	Manziel	Magnolia's Malone-Taylor 1, 330 out sec 30-ac lse, John Polk Sur; orig Comp as 630-ft Paluxy flowing well.	4- 1-44	10-25-45	8802	8316- 8364	Gloyd li; L. Cre	F 20 per mln; open	....	Ant; geol	Volume gas-distillate not profitable at this level. Fld's 2 deeper oil zones not present.
		NORTH TEXAS—New Oil Fields									
Jack	.....	Hanlon-Buchanan, Inc.'s C. L. Whitsett 1, 467 out n corner lot 22, BBB&C Ry Co. Sec. 2, A-1475, 2½ mi ne Hoefle fld but separated by failures.	6-28-45	10-23-45	5184	5173- 5184	Bend li; Penn	P 40, 40 wtr	....	Ant; geol	Unimportant.
Montague	Belcherville	Venmex Oil Co.-Aro Equipment Corp's A. E. Beakley 1, 330 ewl and 400 nsl of n½ blk 21, M. Garnett Sur A-290, 2¾ mi w by n Rogers & Rogers fld.	8-28-45	10-12-45	5913	5347- 5356	Bend cgl, Penn	F 933; 3/4"	44	Ant; geol	Top Bend 55 ft high to 5893-ft failure ⅝ mi to se; prod fr lower sect cgl beds probable. May involve substantial producing area.
Young	.....	L. T. Burns' J. H. Crain 1, 330 out sec of n½ sect 169, TE&L Co. Sur, 2½ mi sw Olney; 2 mi nw Burns-Larimore fld.	9- 3-45	10-19-45	4955	4938- 4955	Mississippi li; Miss	F 1440; 3/4"	44.5	Ant; geol	Productive area will be small and erratic in performance.
		WEST CENTRAL TEXAS—New Oil Field									
Concho	Eden	Eltex, Ltd.'s E. L. Martin 1, 330 out nec sect 6, Wm. Hughes Sur, A-1732, 5 mi nw Eden; 4 mi nw Eden gas fld.	7-10-45	10- 2-45	4392	3801- 3809	Marble Falls sdy-li; Penn	F 648; 1/2"	44	Ant; geol	2nd oil disc for county. Potential based on 3-hr gauge. More wells necessary to evaluate importance of strike.
		WEST TEXAS—New Oil Field									
Crane	.....	Magnolia's Mrs. H. H. Tucker 1-B, 330 fr nw and 1868 fr ne lines H&TC Ry 25, blk 1, 2¾ mi nw McKee pool; 1⅞ mi sw depleted 5700-ft Waddell disc.	5-20-45	10-18-45	5817	5785- 5809	Waddell sd; Ord	P 19	38.6	Ant; geol	Pay zone not important source of prod in district.
		WEST TEXAS—Oil Field Extension									
Cochran	Dean	Texas Gulf Prod. Co.'s Allie Slaughter 1, 550 out nwc 444-ac lse, or 6388 wel and 6136 snl Lge 113, Potter C SL sur, 3 mi w by n Dean fld.	6-23-45	10- 9-45	5063	4965- 5063	San Andres li; Perm	F 141, 18 wtr; 2"	31.5	Ant; geol	Potential based on 9-hr gauge, and quit flowing. 3-mi stretch intermediate acreage may prove erratic.

[1] Character of producing formations abbreviated thus: ch, chalk; dolo, dolomite; li, limestone; sd, sandstone; sh, shale, ser, serpentine; cgl, conglomerate. Ages of formations abbreviated thus: Pleis, Pleistcene; Plio, Pliocene; Mio, Miocene; Olig, Oligocene; Eoc, Eocene; U. Cre, Upper Cretaceous; L. Cre, Lower Cretaceous; Jur, Jurassic; Tri, Triassic; Perm, Permian; Penn, Pennsylvanian; U. Miss, Upper Mississippian; L. Miss, Lower Mississippian; Devo, Devonian; Sil, Silurian; Ord, Ordovician; Cam, Cambrian.

[2] Barrels of oil per day (24 hr. rate), flowing (F), pumping (P), swabbing (Sw), or bailing (B); or million cubic feet of gas daily open flow capacity; size of choke given in inches. [3] Type structure abbreviated as follows: Ant, Anticline; D, Dome; Fld, Fold or Folded; Flt, Fault or Faulted; M, Monocline; N, Nose; SD Salt Dome; Str trp, Stratigraphic trap; Syn, Syncline; Ter, Terrace. [4] Method of discovery abbreviated as follows: cd, core drilling; dr, drilling; geol, geology; geop, geophysics; grv, gravity meter; ran dr, random drilling; seis seismograph; sub, subsurface geology; sur, surface geology.

How to Enjoy Axelson Advantages

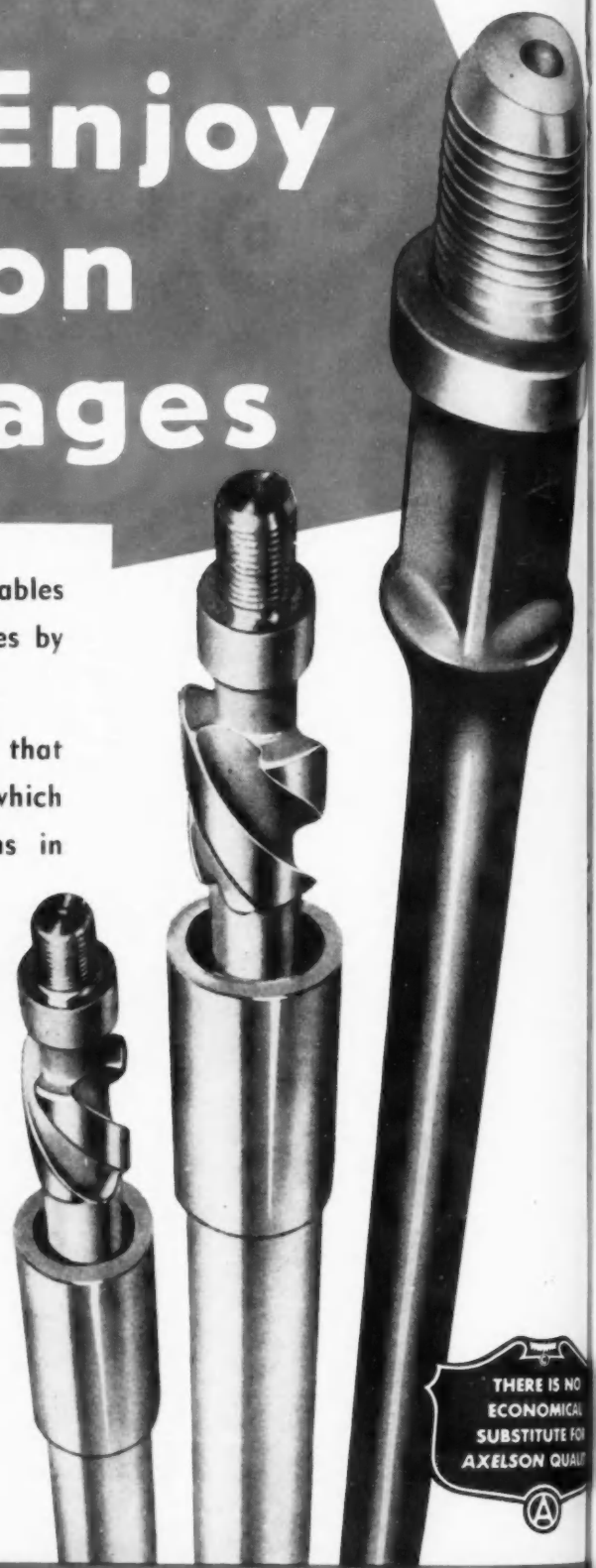
Our store near your wells enables you to enjoy production advantages by the baker's dozen.

The Axelson line is so versatile that pumps and parts can be selected which are ideally adapted to conditions in the very well under consideration.

Axelson Stuffing Boxes, Polished Rods and Sucker Rods complete your source for the best that minds and men have achieved in pumping equipment.

Pump repair service further simplifies your production problems.

Learn to enjoy Axelson Advantages. Learn to profit by the foresight and facilities of your Jones & Laughlin Supply Store.



JONES & LAUGHLIN SUPPLY COMPANY

Subsidiary of Jones & Laughlin Steel Corporation

TULSA, OKLAHOMA

J&L STEEL

Exploratory Drilling

■ CONTINUED FROM PAGE 54

wartime problems acted as a brake upon wildcatting, although some increase over 1944 was achieved. But the end of the war has alleviated some of these problems, and intensification of activity is being undertaken by some operators, with benefit of the services of returning veterans and of former war industry workers who have been released. However, this readjustment is taking time, and it may not be materially reflected in drilling statistics until next year.

It is not yet clear what next year's trend in wildcatting will be. But if the industry as a whole adopts a course similar to that contemplated by various important individual companies, there will be at least as much wildcatting in 1946 as in 1945, and probably more. Some of the larger concerns are planning very active exploration and wildcatting programs, and of course, conditions should be favorable for their being able to carry the plans out.

The active programs are being projected for both short-term and long-term reasons. They will serve the immediate purposes of fitting veterans back into the industry's operations, and they also will help companies to improve their positions on reserves, which were drawn upon very heavily in meeting the heavy wartime needs for petroleum products. Furthermore, companies looking farther ahead foresee the setting of new records in consumption and production of petroleum when readjustment to peacetime is completed, and greater crude reserves than ever before will be generally strived for. It is recognized that the developing of reserves is a prolonged job, that it takes several years to put a wildcat area on the list of producing fields, and consequently there must be ample wildcatting now in order to meet the needs of several years hence.

This looking toward the future will induce wildcatting not only by the larger companies but also by the smaller concerns and individuals. Even if a wildcatter intends to sell such discovery blocks as he may prove up, he should have no great difficulty in finding buyers.

Promotional Head Named

Appointment of Colonel John H. White, Jr., Rochester, New York, as director of the new promotional bureau of the American Gas Association has been announced by D. A. Hulcy, chairman of the promotional committee.

The promotional bureau, which has been set up under the enlarged Gas Industry Research and Promotional Plan, will develop and conduct industry-wide sales promotional programs. Colonel White will join the association's headquarters' staff in New York December 1.

Veterans Courses Offered

Hobart Trade School, Inc., Troy, Ohio, conducted by The Hobart Brothers Company, is enrolling veterans of World War II in a specialized welding and metal-working training course which has been approved by the Veterans Administration to train discharged soldiers under the G. I. Bill of Rights.

Lubrication Problems Solved By Long Neck Pressure Oiler

A SIMPLE, shop-made, long-range oil can has been designed to enable the pumper of a large lease to lubricate hard-to-get-at places. The equipment requiring lubrication consists of 350 pumping jacks of almost similar design. The top bearing in the jack to jack-line connection is about 12 feet above ground level and difficult to lubricate.

Because the jacks are considerable distance from the source of motion, it is not feasible to stop pumping operations just to lubricate. Also, to lubricate in the usual manner would entail climbing a ladder, involving too much time because of the great number of wells on this pumping string.

The pumper employed, designed and built from scrap materials a pressure oiler, greatly speeding the job to be done to each well. Also, because the operator does not have to climb above the ground level, the tools adds to the safety and greatly reduces the effort expended by the pumper.

The body or oil container was made from a discarded fire extinguisher tank. This was found suitable for the small pressure required and also light enough to carry around. A five-foot piece of ½-inch pipe was brazed into the top or dome end of the tank with the pipe extending down into the tank, reaching almost to bottom. Near the top of the tank a valve stem taken from an auto tube was welded in place. This serves as a check valve and fills the valve for the air. A pipe coupling opposite the air valve serves as an oil inlet. This is shut off with a pipe plug. About three inches up the ½-inch pipe is the control valve of the simple spring lever control type. At the upper end of the pipe a short length of ¼-inch copper tubing has been added. This provides the necessary flexibility required in bending the tubing to reach into the bearing. After a short time the "just right" position of this copper tubing was found and after that no additional bending was required.

In operation the procedure is simply to fill the tank with lubricating oil and then charge with air pressure. Inasmuch as a head of only 12 feet is to be overcome in oiling, only a small pressure is required.

This was the first model built. In future models the designer states that the only change he would make would be to replace the heavy ½-inch pipe with smaller diameter steel tubing of the "Shelby" type. The pipe itself does not weigh too much but the large diameter permits too much oil to be contained in the tubing, making a somewhat top-heavy condition.

A simple carrying rack was made to fit over the fenders of the pumpers pick-up truck as an aid in making the oiler easy to use. Since the lubricating oil is sealed within the tank, no oil is spilled, adding to the general cleanliness of the lease operations.

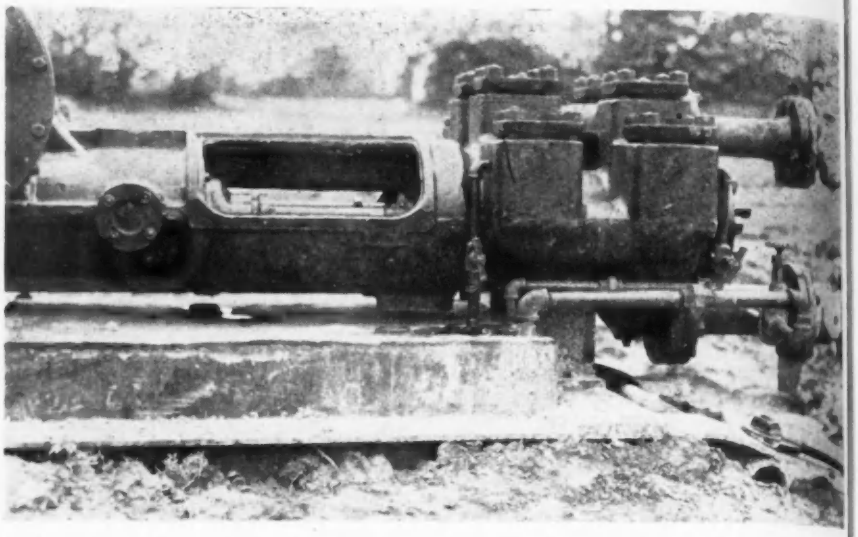
Tank Within Pump Skid Collects and Returns Fluid Vented from Pump

Simplifying the piping required for bleeding his field pump while priming to remove entrained air or gas, one producer also concentrated the unit so as to require minimum space.

PUMP VENTING

A rectangular tank, welded up from scrap tank steel and braced to afford required stability, is set between the side members of the pump skid, with its upper surface close under the main casting of the pump. The pump bleeder lines are tied to this sump through short lines terminating in the fittings welded into the tank top, while a drop leg, reaching nearly to the bottom of the tank, permits the pump suction to be utilized to pick up accumulations when they have reached a volume requiring emptying of the sump.

A vent, located well up under the pump housing, is provided with a raised collar so that water or oil on top of the tank cannot flow into the container, there to contaminate the oil gathered through the venting system.



Similar protected openings, spotted under the drip points of the fluid end of the unit, serve to trap any oil which may work past the packing and tend to collect within the pump frame.

Swing connections and unions enable the pump to be handled separately from the sump while rigging up or transporting to a new site.

$5.00 is paid for each illustrated acceptable contribution. Mail to The Editor, THE OIL WEEKLY, P. O. Box 2608, Houston 1, Texas

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WATER GAGE SET

For oil field, locomotive type and marine boilers. Water shows black — steam shows white; the water level is unmistakable. U-Bolt construction is strongest and simplest to service. Glass replaced by simply removing nuts on face of gage . . . unnecessary to work between gage and boiler. Conforms with A.S.M.E., Federal and State requirements when used for pressures specified by their respective codes.

This is one of the complete line of Penberthy gages that meet every liquid level gage requirement.

See Pages 2450 to 2455, Composite Catalog

PENBERTHY INJECTOR CO.

DETROIT, MICH. Canadian Plant WINDSOR, ONTARIO

Cylinder, Gas-Powered, Pinch Hits as Pump Drive

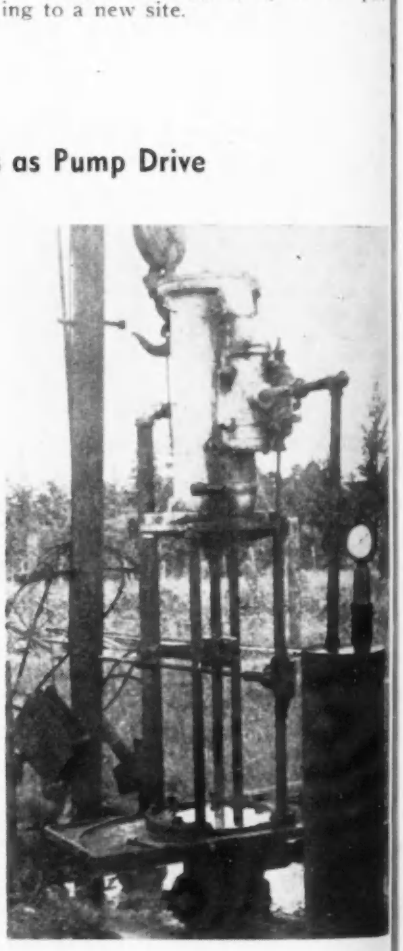
Where residue gas is plentiful, and the lease pressure is higher than the requirements of the system in which that gas is salvaged, many unique methods of utilizing the energy of the flow have been worked out.

POWER UNIT

One producer rigged up a junked steam engine cylinder from a (normally) horizontal pump to operate a water well. In this instance the fluid end is down the well, instead of being adjacent to the power cylinder, as is normal.

What normally would be the front end of the pump end of the unit is supported on the plate attached to the casing head, with the stuffing box retained at the face to provide the closure around the extended piston rod, now also serving as polish rod.

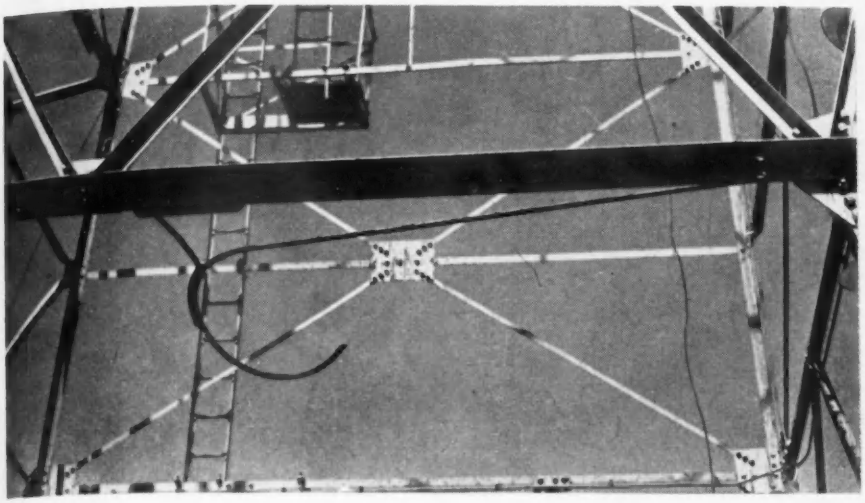
The field gas is first scrubbed in a volume tank to remove entrained foreign matter, such as pipe scale, and to allow condensate to drop out. The gas then enters the valve chamber, timing of the inlet being controlled by connection between valve rod and polish rod. Weight of the sucker rod string causes the piston to return to its lower position, the exhaust opening being partially blocked so as to provide a cushion at the bottom of the stroke to halt the downward motion and prevent metal contact.



The exhaust gas is collected by the discharge line, and may be burned as fuel under a boiler or in an internal-combustion engine, as desired.

PRODUCTION HINTS

Girt-Mounted Holdback Simplifies Rod Support



PULLING SUCKER RODS

A sucker rod hold-back that gives excellent service yet does not interfere in any way with the pulling unit or operations on the derrick floor, may be built in a few minutes in the welding shop. A length of 7/8-inch sucker rod is bent in the shepherds-crook shape as in the installation shown. The single longer piece is some 10 to 12 feet long over all. A shorter piece welded to it near the crook-end braces the assembly and the two legs thus formed are secured to two points along the inside of the lower girt.

With the loop mounted in this higher position it is very handy for the men racking the stands of rods, for while the rack is not reachable with the hand, the rod stands nevertheless can be swung easily behind it and released. With the rods held bundled together at this higher point, the bottom ends of the stands will tend more toward the edge of the derrick floor, providing somewhat more working space near the pulling unit.

Tubing-Board Windbreak Assists Derrick Man

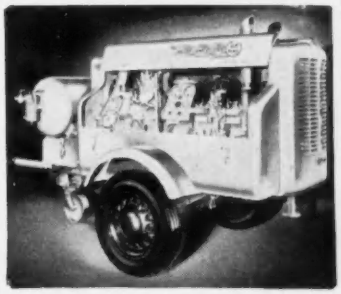
WELL SERVICING

In the Northern states, use of a canvas screen to protect the tubing board man is well worth the space it takes on the truck and the extra trouble to put it up. In fact in a gale such as may be encountered in the Texas Panhandle or Western Kansas, the wind will keep it pretty well installed, after it is put up.

In many pulling jobs, the tubing-board man must choose between making the trip to the floor or braving the cold blast when minor shutdowns are encountered. With a windbreak on two sides of the derrick, and all the clothes that he can procure wrapped around him, he is usually able to stay on the job for the duration of the pulling job.

Using a rectangular tarpaulin approximately 10x25 feet and stretching it around the windward side of the tubing board and tying it fast on each corner and in the middle, it is possible to make the weather about the same as on the derrick floor. The canvas is raised to the tubing board in a roll and one end fastened before being unrolled. Where possible, the tubing board is placed on the side of the rig from which the wind is blowing and the wind breaker fastened to the outside.

The Largest Contractors Equipment Company in the South



AIR POWER FOR YOUR DRILLING RIG—Jaeger "Air Plus" Compressors provide dependable, economical power for air-operated drawworks clutch, diesel engine starter, air-operated rotary slips, and many other jobs around the power rig.

This two wheel trailer model is ruggedly constructed to withstand hard field use. Available in 105 foot model, delivering air at 100 pounds pressure.

Immediate delivery from Texas stocks . . . no priorities required.

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Clean Out with a

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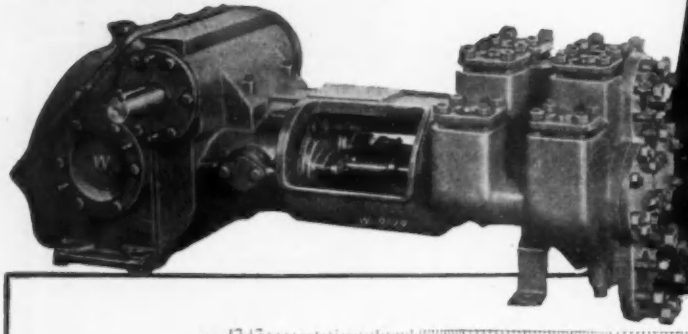
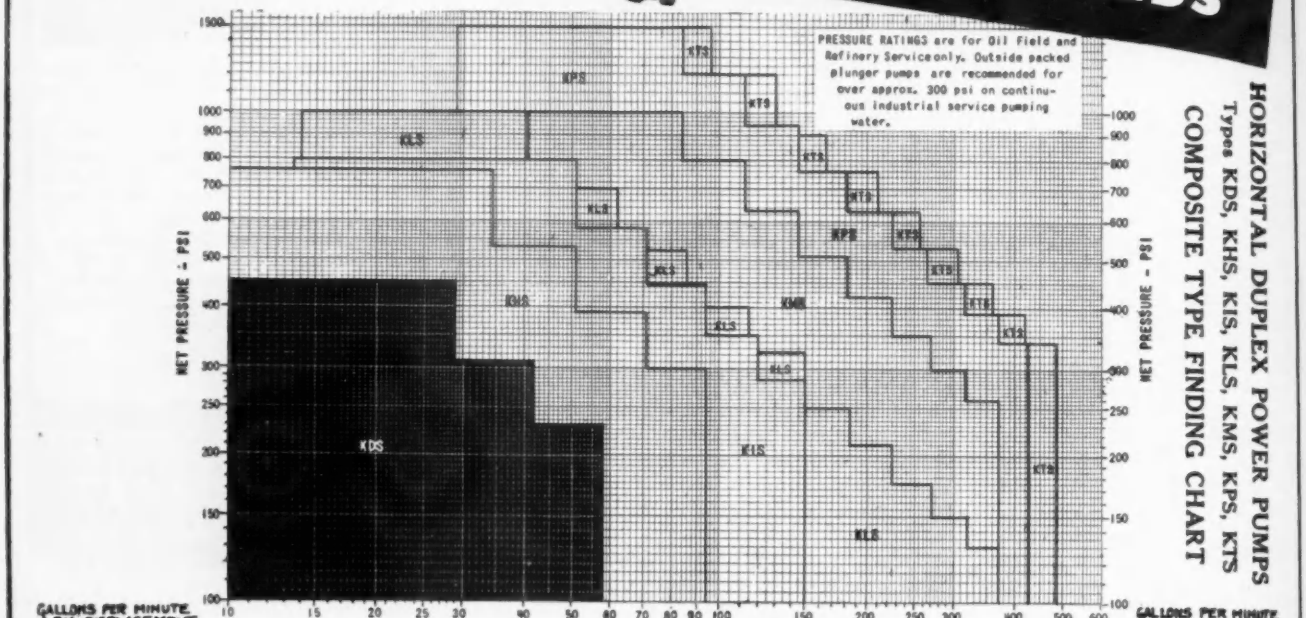
See Composite Catalog Page 1907



THERE'S ONLY ONE SIZE OF PUMP THAT'S RIGHT FOR YOUR NEEDS


HORIZONTAL DUPLEX POWER PUMPS
Types KDS, KHS, KIS, KLS, KMS, KPS, KTS
COMPOSITE TYPE FINDING CHART
PRESSURE RATINGS are for Oil Field and Refinery Service only. Outside packed plunger pumps are recommended for over approx. 300 psi on continuous industrial service pumping water.
NET PRESSURE - PSI
GALLONS PER MINUTE G.P.M.-DISPLACEMENT
BARRELS PER HOUR DISPLACEMENT (42 GALLONS)
BARRELS PER HOUR (42 GALLON)
KDS
KLS

The black section of Worthington's Composite Type-Finding Chart shows you the gallons per minute and barrels per hour you can get at net pressures from 100 to 450 PSI at standard pump speed of 90 RPM from the 4" KDS Worthington Horizontal Duplex Pumps described in Bulletin W-411-B30A. Write for it.

Only Worthington has all sizes and types

Since Worthington has more sizes and types of Horizontal Duplex Power Pumps than anybody else, you can be sure of getting the one size and type that will make your gathering operations most profitable.

And since Worthington stocks all sizes and types for pressures between 100 and 1500 PSI and displacements from 14 to 700 barrels per hour *plus* all necessary repair parts in Tulsa, Dallas, Houston, New Orleans, Los Angeles and San Francisco, you can be sure of getting the right pump in a hurry . . . and keeping it operating continuously.

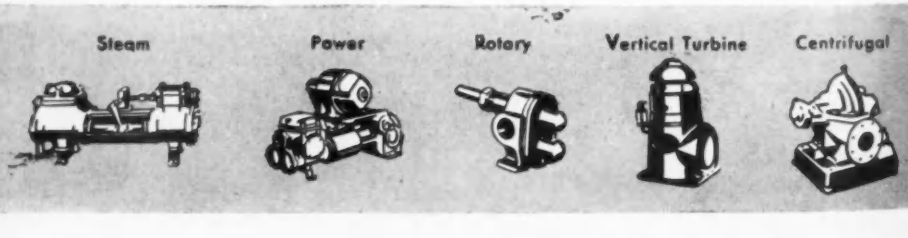
So that you can know at a glance what the right pump is for your requirements, Worthington will gladly send you the free chart reproduced in miniature above as evidence that *there's more worth in Worthington.*

Write for it today. *Worthington Pump and Machinery Corporation, Reciprocating Pump Division, Harrison, N.J.*

WORTHINGTON

PS.7

THE WORLD'S LARGEST MANUFACTURER OF PUMPS



Refinery Runs Lower But Stocks of Gasoline and Distillate Increase

Although there was a further increase in crude oil production in the week ended November 17, refinery runs were reduced and production of principal products declined. Stocks of gasoline increased sharply, and there was some accumulation of distillate fuel oil in storage, although residual fuel oil stocks decreased.

U. S. crude production of 4,474,000 barrels per day was 23,000 higher than in the previous week, although 265,000 a day or 5.6 percent under output in the corresponding week last year. Crude runs to stills averaged 4,693,000 barrels daily, exceeding the domestic production more than 200,000 barrels per day. While the new rate was 96,000 a day lower than in the previous week it was 95,000 daily or 2.1 percent above runs in the like week last year.

Gasoline production of 15,577,000 barrels for the week was 216,000 barrels less than in the previous week but 784,000 barrels or 5.3 percent in excess of that in the comparable week a year ago. Stocks of finished and unfinished gasoline were increased by 2,766,000 barrels, having risen to 80,954,000 barrels. That amount was 2,294,000 barrels or nearly 3 percent more than the 78,660,000 barrels reported on hand November 18 last year. Stocks of civilian grade were increased 2,766,000 barrels to 55,066,000 barrels, which compared with 39,437,000 barrels a year previously. Military and other grades increased 171,000 barrels and then totaled 25,888,000 barrels, compared with 39,223,000 a year before.

Distillate fuel oil production amounted to 4,586,000 barrels during the week, a decrease of 265,000 from the week before but 161,000 barrels or 3.6 percent more than production in the like week last year. Stocks rose 215,000 barrels to a total of 45,341,000, but that amount was 1,868,000 barrels or 4 percent less than the 47,209,000 barrels held a year earlier.

Residual fuel oil production of 8,514,000 barrels during the week was 173,000 barrels less than output the week before and 533,000 barrels or nearly 6 percent less than the 9,047,000 barrels produced in the corresponding week last year. Stocks declined 328,000 barrels to 45,608,000, and that amount was 17,857,000 barrels or 28 percent less than the 63,465,000 barrels on hand a year before.

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod.		Runs to Stills		Crude Stocks		Gasoline Stocks		Gasoil and Distillate Stocks		Residual Fuel Oil Stocks	
	Barrels Daily	Week Ended	Barrels Daily	Week Ended	Barrels	Week Ended	Barrels	Week Ended	Barrels	Week Ended	Barrels	Week Ended
Highs:												
1941	4,337	11-22	4,120	10-18	266,187	3-29	99,727	3-29	[1]54,983	11-15	102,448	1- 4
1942	4,337	2- 7	3,961	1- 3	263,208	3-28	[1]109,281	3-14	47,861	11-14	95,857	1- 8
1943	4,436	11-13	4,331	12- 4	245,752	5-29	94,159	3-20	47,187	11-27	72,881	1- 2
1944	4,762	9-30	4,798	12-30	240,992	1- 1	89,162	4- 1	48,162	10-28	64,744	10- 7
1945	[1]4,944	7-14	[1]5,140	8-18	227,554	10-13	99,012	3-24	45,341	11-17	56,074	1- 6
Lows:												
1939	[3]1,601	8-26	3,125	2-18	[2]229,127	10-12	71,152	10- 7	20,722	4-15	105,397	4- 3
1941	3,364	1-11	3,490	1-18	240,399	11-15	79,923	10- 4	28,382	4-12	90,914	7-13
1942	3,297	7- 4	3,393	5-23	231,896	12-12	75,934	12- 5	29,240	4-25	72,962	12-26
1943	3,821	1- 9	3,579	3-18	232,191	1- 9	68,182	10-16	30,732	4- 3	57,596	12-25
1944	4,357	1- 1	4,228	2-12	220,258	9- 9	76,302	1- 1	30,232	4-19	49,737	3-18
1945	3,621	10- 6	3,409	10- 6	211,813	8-25	70,791	10-13	26,483	3-17	38,548	5-26

TRENDS OF 1944 AND 1945

Trends in Week Ended:	Crude Oil			Gasoline		Gasoil and Distillate		Residual Fuel	
	Production Daily	Runs to Stills Daily	Stocks Week End	Production Weekly	Stocks Week End	Production Weekly	Stocks Week-End	Production Weekly	Stocks Week End
1944:									
January 1	4,357	4,453	240,992	13,192	76,302	4,575	42,310	9,141	57,380
January 29	4,400	4,359	240,251	13,427	81,075	4,054	37,266	8,889	52,857
February 26	4,423	4,377	237,137	13,183	85,248	4,558	33,766	8,952	51,387
March 25	4,385	4,443	236,285	13,362	87,287	4,979	31,319	9,018	51,669
April 1	4,383	4,435	234,667	13,824	89,162	4,450	30,530	8,367	51,326
April 29	4,431	4,300	235,342	13,126	88,342	4,284	30,236	8,398	49,985
May 27	4,514	4,532	234,423	13,502	86,468	4,702	32,035	8,568	49,812
July 1	4,587	4,638	228,860	14,052	83,559	4,496	35,360	8,872	52,235
July 29	4,608	4,627	225,112	14,115	82,665	4,833	38,135	8,900	56,280
August 26	4,667	4,698	222,931	14,112	80,740	4,566	41,453	8,680	59,839
September 30	4,762	4,775	222,393	14,494	78,028	4,622	45,329	9,292	64,226
October 28	4,740	4,658	223,235	14,117	79,058	4,772	48,705	8,985	64,382
December 2	4,712	4,693	221,591	14,853	80,427	4,082	45,832	8,981	61,727
December 9	4,704	4,552	220,258	14,611	80,880	4,056	44,430	8,923	60,458
December 16	4,695	4,537	222,075	14,145	82,747	4,353	42,413	8,727	59,280
December 23	4,729	4,682	222,575	14,635	83,355	4,605	40,846	8,798	58,509
December 30	4,705	4,798	222,998	15,342	86,614	4,257	39,495	9,156	57,430
1945:									
January 27	4,727	4,756	221,310	14,957	88,223	4,843	33,561	9,252	51,119
February 24	4,777	4,803	219,351	15,500	95,972	4,958	28,753	9,084	46,713
March 31	4,781	4,677	223,782	14,644	98,758	4,548	26,889	9,184	41,745
April 28	4,805	4,780	223,474	14,633	94,068	4,636	28,273	9,379	39,813
May 26	4,887	4,950	222,831	15,194	89,121	4,667	29,184	9,670	38,548
June 2	4,859	4,804	224,079	15,317	88,696	4,857	29,819	9,437	39,022
June 9	4,853	4,827	221,552	15,256	87,896	4,842	30,339	9,382	38,996
June 16	4,888	4,915	221,932	15,132	87,504	5,342	30,397	9,252	39,482
June 23	4,898	5,002	220,974	15,367	87,462	5,014	31,761	9,558	39,893
June 30	4,903	4,999	220,781	15,546	86,472	4,910	32,213	9,077	40,488
July 7	4,886	5,006	217,250	15,082	86,329	4,875	33,667	9,238	40,754
July 14	4,944	4,945	216,355	15,349	85,401	5,197	34,804	9,337	41,489
July 21	4,944	4,927	218,108	15,430	85,930	5,090	35,458	9,071	42,480
July 28	4,930	4,996	218,507	16,106	86,008	4,598	36,071	9,586	42,283
August 25	4,892	4,931	[4]211,813	15,986	84,693	4,960	39,782	9,356	46,201
September 29	4,357	3,812	222,387	11,913	79,552	3,940	43,689	7,047	46,853
October 27	4,273	4,838	224,230	15,530	74,335	5,159	43,472	8,691	45,943
November 3	4,318	4,807	221,031	15,234	76,551	4,986	44,810	8,922	46,128
November 10	4,451	4,789	219,999	15,793	78,188	4,851	45,126	8,687	45,936
Nov. 17, 1945	4,474	4,693	.....	15,577	80,954	4,586	45,341	8,514	45,608
Nov. 18, 1944	4,739	4,598	[5]222,467	14,793	78,660	4,425	47,209	9,047	63,465
Change:									
In week	+23	−96	−1,032	−216	+2,766	−265	+215	−173	−328
In year	−265	+95	−2,468	+784	+2,294	+161	−1,868	−533	−17,857
In year	−5.6%	+2.1%	−1.1%	+5.3%	+2.9%	+3.6%	−4.0%	−5.9%	−28.1%

[1] All time peak. [2] Lowest between January, 1922 and July 1, 1944. [3] Lowest since October, 1922, due to shutdown of six Mid-Continent states. [4] Lowest since December, 1921. [5] Stocks, November 11, 1944.

Sohio Adds 40 Wells

Forty producing oil wells in Kansas owned by the Margay Oil Corporation of Tulsa, were to be taken over by Sohio Petroleum Company November 20 in accordance with the recent acquisition by Sohio of all Margay interests. The wells are in the prorated areas of Western Kansas and have a combined potential of 29,470 barrels of oil daily. The wells are producing about 1050 barrels per day.

Leases Bring Bonus

Devonian Oil Company, Tulsa, paid top bonus at a sale of oil and gas leases of the Five Civilized Tribes November 6 at Muskogee, Oklahoma. The Tulsa firm bid $31 an acre for a 100-acre lease in the Wayne area of McClain County. Forty-five of the 82 tracts offered were sold for bonuses totaling $24,470.92. Anderson-Prichard Oil Corporation, Oklahoma City, paid $23.50 an acre for ten acres southeast of the new North Lindsay pool in Garvin County.

FPC Sets Hearing on Plan to Increase Gas Deliveries to Midwestern Section

The Federal Power Commission has announced a hearing for December 10 on the joint applications of the Natural Gas Pipeline Company of America and its affiliate, Texhoma Natural Gas Company, together with an application of the Chicago District Pipeline Company.

The proposed construction by Natural and Texoma, estimated to cost $18 million, would enable the companies, which are operated as one system, to increase their natural gas delivery capacity from 268 million to 349 million cubic feet daily to serve a number of additional Iowa and Illinois communities and provide increased deliveries to Chicago, which would expend an estimated $1,425,000 to provide the necessary facilities to receive the additional gas.

Natural proposes to construct loops or additional sections of pipe line parallel to its original 24-inch line, where such loops are not now installed, totaling 285 miles of 26-inch and 52 miles of 24-inch on the northern end of the system. It also would complete a 20-inch line extending about 20 miles north from Garden Prairie, Illinois, and build about 26 miles of 16 and 12-inch lateral line in Illinois.

Texoma plans to install four 1250-horsepower engines at Station 22 in the Panhandle field, enlarge the dehydration and natural gasoline plant facilities at the station, and construct about 26 miles of 26-inch line to loop its present 24-inch line along the northerly portion of its transportation system.

Chicago would build two sections of 24-inch line aggregating about 23 miles to parallel two sections of its so-called Crawford line and construct additional appurtenant facilities.

Gas Carrier Being Built; Magnolia Replacing Line

Bryce C. Candless, San Angelo, Texas, producer, is laying five miles of three-inch welded line to connect his discovery gasser for the Owego pool, Pecos County, to the Macder area, where connection will be made with Helmerich & Payne, Inc.'s, six-inch discharge line to the Girvin plant of the Texas Utilities Company.

Magnolia Pipe Line Company is replacing eight miles of four-inch line with eight-inch on its four- and six-inch lines that deliver sweet crude from the Fullerton field, Andrews County sector of West Texas, to Andrews station and tank farm on its Slaughter-Midland system. This new unit will boost the outlet for Fullerton field to 35,000 barrels daily.

Mattoon Pool in Illinois To Get Pipe Line Outlet

An outlet for the expanding Mattoon pool of Coles County is assured with completion of plans by Interstate Oil Pipe Line Company of Tulsa to extend service to the field.

L. F. Kahle, executive vice president, said the company is doing survey work for 19 miles of eight-inch line, which when completed will connect with The Ohio Oil Company's pipe line a a pumping station near Montrose, Illinois.

Steadily increasing production in the pool is currently being moved from the area by truck and tank car.

Pipe Being Shipped for New Pennsylvania Line

Whitaker Contracting Company, Houston, is shipping equipment to Pennsylvania for a pipe line construction job for the Socony-Vacuum Oil Company. The job will consist of about 100 miles of 14, 12, 10, 8 and 4-inch pipe.

Material is being shipped to Middletown, Malone and Westchester. The complete job has not been outlined but will consist of both oil and products carriers.

Humble Begins Delivery Of Crude to Globe Firm

Humble Oil & Refining Company has started delivery of 100,000 barrels of 38-gravity (average) crude monthly to Globe Oil & Refining Company on contract to continue through 1946. Humble Pipe Line Company delivers the oil to The Texas Pipe Line Company near Ranger, Texas, and the movement is routed north to Oklahoma, then via the Texas-Empire Line Company in reaching the purchaser's refinery at Lamont, Illinois.

Pipe Line Patrol System Is Inaugurated by Humble

The inauguration of an airplane pipe line patrol has been announced by Humble Pipe Line Company.

A small Luscombe plane, which the pilot inspector will fly, has been purchased by the company. Looking out his window at 500 feet or lower, he will inspect the grounds over the pipe lines for tell-tale oil spots and other disturbances that might need the attention of repair crews.

The section of line to be patrolled will be about 915 miles in length, entailing 1050 miles of flying. It will take the pilot inspector two days to make the route on one patrol, officials estimate. Lines to be inspected are from Baytown to McCamey in West Texas via Webster, Hearne, San Angelo and Big Lake, with the return trip via Yates, Pecos, Big Lake, Humble Pipe Line Station C, which is about 40 miles from Kerrville, Seguin, Luling, West Columbia, and back to Webster.

By inaugurating the use of the plane on this route, one man will be able to patrol an area formerly covered by several line walkers, to be transferred to other suitable positions in the company.

East Texas-Louisiana Gas Line Nears Completion

Construction of United Gas Pipe Line Company's 143-mile, 24-inch gas line from the Carthage field, Panola County, Texas, to a point of connection with the Tennessee Gas and Transmission Company's 24-inch line at Monroe, Louisiana, is near completion.

O. C. Whitaker Company, prime contractor on the job, is setting gates and testing the line. Sub-contractors were Associated Contractors and Engineers, Houston firm, and Oscar Dempsey, Tulsa contractor.

Whitaker also is completing a gathering system in the Carthage field for United.

New West Texas Line

The Texas Gulf Producing Company, Houston, is building a three-mile, four-inch crude line from its semi-wildcat strike in Cochran County sector of West Texas to the Dean pool, where connection will be made with the Magnolia Pipe Line Company's system. Two more wells are in process of completion, while intermediate acreage will be explored.

Crude Contracted

McMurrey Pipe Line Company, a unit of the McMurrey Interests of Tyler, Texas, has contracted to sell its 1000 barrels of controlled crude runs daily in the East Texas field to the Pan-American Pipe Line Company, effective January 1, 1946, for five years at the posted price plus 5 cents per barrel gathering tariff. This oil is currently utilized by the McMurrey Refining Company's 6000-barrel capacity refinery at Tyler, Texas, but the plant will suspend operations at the end of this year.

West Texas Extension

Onyx Refining Company, Abilene, is building a six-mile, six-inch extension from its West Central Texas system to connect with Magnolia Pipe Line Company's West Texas-Corsicana sweet crude carrier near Merkel, Texas. The former recently contracted to sell 5000 barrels daily of its crude runs in Jones and Taylor counties to Magnolia for two years.

Recycling Plant Planned

Warrent Petroleum Company, Tulsa, is clearing site for the construction of a natural gasoline and recycling plant, rated at 10 million cubic feet daily, in the Hull-Silk field, Archer County sector of North Texas. Plant will be located in SW SW HT&B survey, Sec. 1, A-199. Such a project was attempted by operators during the early stages of development.

Three New Wildcats in Colombia Bring To 23 Number of Rigs Now Being Run

Exploratory work seeking to expand Colombia's oil resources continues to increase, reports showing two new rigs placed in operation, both wildcats, and a third wildcat expected to get under way shortly, which will bring to 23 the total number of rigs running.

The two wells most recently spudded are Richmond Petroleum Company's Caraballo 1, south of Barranquilla in the Department of Magdalena, another in their series of wildcats which have thus far been unsuccessful, and Socony-Vacuum's El Pedral 1, a wildcat across the Magdalena River from the company's Cantagallo concession where several producers have already been completed. Both the Cantagallo and the El Pedral areas are being operated by Compania de Petroleo del Valle del Magdalena, Socony-owned.

Following a lengthy period of preparation and final clearing of title to its large tract of fee land in western Boyaca on the east bank of the Magdalena, The Texas Company is setting up now on its location for Velazquez 1, and soon should be drilling. An operations camp has been built. Gulf interests and Richmond Petroleum Company both hold concessions in the area which no doubt will be affected by the outcome of this test.

Meanwhile, more than usual interest is being shown in the outcome of testing now in progress on the deepest of several wells now being operated by Sinu Oil Company (Tropical and Socony-Vacuum joint interest) on the Floresanto concession in the Department of Bolivar in extreme northwestern part of Colombia. With total depth 6936 feet, the well was being swabbed during the first period of production testing, with results not yet available. Production here would open the first oil area in the western and northern area of the country in a province which has long been tagged favorable by geologists. A showing of oil at 630 feet had been noted during early drilling stages in this well, but it is thought that a deeper horizon is being tested.

Russia Masters Secrets Of Oil Well Machinery

A recent Moscow broadcast stated that "the largest enterprises of the Urals are now mastering the production of complicated oil well machinery," adding that manufacture of Soviet oil equipment was no longer confined to tubes.

Powerful pumping machinery will soon be produced which can raise oil from a depth of three kilometers (about two miles), the report said. Kalinin Artillery Works produced the first turbine-borer and mass production will start immediately. The Vorovsky Works and the Uralmash plants are also manufacturing oil machinery.

Meantime, a recent Tass Agency report from Moscow says that "extensive research work" is being conducted at the Moscow Oil Institute.

"The technique of geochemical oil prospecting has been considerably improved," the report stated. "An extremely sensitive instrument invented by Professor Sokolov is used for this purpose; with it, the presence of a 100,000th of 1 percent of natural gas can be detected. The new method of studying oil-bearing strata evolved by the Institute is being applied in Kuban and Northern Caucasus oil field prospecting, and makes it possible to place the oil wells more effectively. Moreover, the Institute staff has discovered a new substitute for rubber which is being successfully applied in the manufacture of oil pumps and turbine drills. It can also be used for building gas tanks.

Another Tass message states that turbine technique of drilling inclined oil wells, developed by the Baku engineers Idanishan and Gusman, is being widely applied on Soviet oil fields.

"By this method oil is obtained from almost inaccessible layers," the report said. "Wells are being drilled in the Urals under large houses and river beds. Forty such wells have already started in Krasnokamsk. In Baku oil from inclined wells is being brought to the shore from below the depths of the sea."

5-Year Plan for Ukraine Production Is Drafted

A five-year plan of oil development in what is now called the "western regions of the Ukraine" has been drawn up, according to a report from Drohobyez, center of the formerly Polish oil fields in eastern Galicia now handed over to Russia.

By the end of 1950 new wells totalling about 170,000 meters (approximately 560,000 feet) will have been drilled. Geological exploration of the entire area of the Carpathian foothills will be carried out. It is planned to build a large power station, new compressor stations and machine shops.

Colombian Oil Workers Inspect Mexican Fields

Of possible significance in relation to oil operations in Colombia is the information that a group of petroleum workers from that country is in Mexico visiting the oil districts, with cooperation of the Mexican petroleum syndicate.

The announced purpose of the visitors is to study production and refining operations and to promote friendly relations between the oil workers of the two countries. They will proceed to the northern or Tampico district after spending a few weeks in the southern or Isthmus region.

The visit has particular significance in view of the fact that there is agitation in Colombia aimed at setting up oil industry wage scales equivalent to those in the United States, and considering that the labor syndicate in Mexico has succeeded in obtaining relatively attractive contracts for the petroleum industry workers there.

Roumania Fast Restoring Production and Refining

Although refineries in Roumania suffered considerable damage during the war, capacity has been restored to about 77 per cent of the previous total, say European press reports to *Foreign Commerce Weekly*.

The fields are said not to have been greatly damaged, and daily production had reached about 85 percent of the prewar figures at the end of 1944.

YPFB of Bolivia Plans Refinery at Cochabamba

YPFB, the Bolivian semi-state entity in charge of petroleum production, is considering the possibility of establishing an oil refinery at Cochabamba at a cost of $5 million.

Argentina Output 812,540 Barrels Below 1944 Period

Argentina's oil production for the first half of 1945 was 13,795,507 barrels, or 812,540 less than in the same period in 1944, according to London reports.

Production of the state-owned wells was 9,291,300 barrels, a decline of 527,737 barrels, and that of privately-owned wells was 4,505,207 barrels, a drop of 284,820 barrels. The slump in output is understood to have resulted from the difficulty in obtaining machinery and spare parts.

Surplus Administrator for Latin America Is Named

Philip C. Kidd of Houston, former lend-lease adviser, has been appointed field commissioner for Latin America to direct the disposal of overseas war surplus and residue, Foreign Liquidation Commissioner Thomas B. McCabe, has announced.

Offices will be opened at Panama and Rio de Janeiro, Brazil. Preliminary arrangements have been made by a FLC group headed by Colonel Clarence D. Barker.

Trinidad Production Up

Trinidad Leaseholds, Ltd., has reported a crude oil production from its own fields of 7,181,860 barrels during the year ended June 30, 1945. This compares with approximately 6,800,000 barrels in each of the two preceding years. Production for the two months ended August 31 was reported as 1,181,876 barrels.

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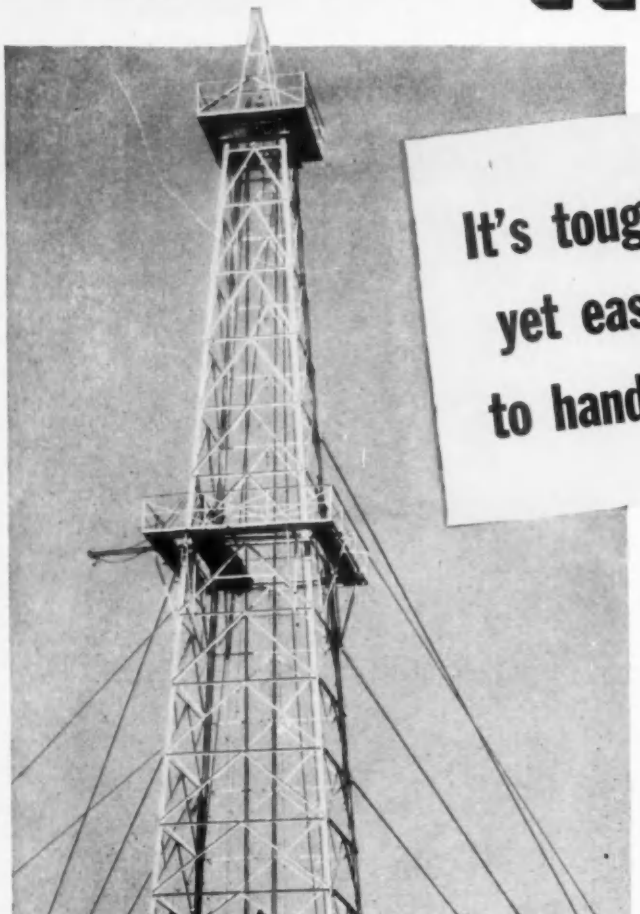

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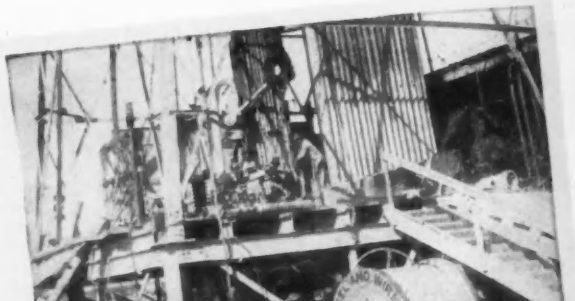

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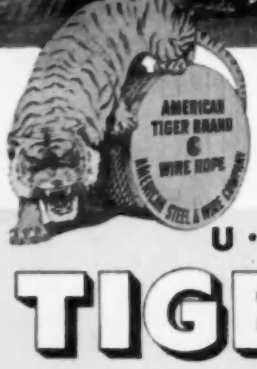

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☆Oklahoma

Carter Proves 2, Abandons 1 McClain County Wildcat

Carter proves 2, abandons 1 wildcat in McClain County; failures define West Edmond on north and west; Skelly extends West Moore pool; Atlantic seeks second Wilcox; new pay noted for Washington pool.

McClain County: The Carter Oil Company's heavy play in McClain County has reached the critical stage with 2 tests earmarked as producers and another, which checked high, due to be abandoned. Mottinger 1, CNW NW 5-6n-3w, due north of Criner, penetrated the Bromide and was drilling in shale below 10,883 feet. This test opened a new pool when it showed for approximately 2000 barrels of high-gravity oil per day on drill stem. Carter's Autry 1, CSE SW 9-7n-3w, Washington pool, showed for 86 barrels of oil in 3 hours on a drill-stem test between 10,580-657 feet, and was reaming down to 10,667 feet for further testing. The Hawkins 1-C, which checked high, probably will be abandoned at 9344 feet after testing salt water. The well is southeast of Criner. In the Washington pool Carter apparently has established a new horizon following drill-stem test of the Hunton between 9668-9677 feet, recovering 7150 feet of clean oil in about 2 hours. The pool produces from the second Wilcox sand below 10,500 feet.

West Edmond: Dry holes apparently have defined the northern and western limits of Oklahoma's 4-county Hunton lime pool. Ace Gutowsky abandoned Hoover 1, CSE SW 14-14n-5w, 1½ miles west of production in Canadian County, at 7000 feet, total depth. No tops were reported. To the north, Magnolia Petroleum Company's Sigl 1, CSW SE 19-15n-4w, Logan County, looks like a failure. It topped Hunton lime at 6844 feet, acidized with 2000 gallons, and swabbed 32 barrels of oil in 24 hours, 2 percent water. Reacidized with 5000 gallons, it failed to recover the 280-barrel oil load. Operator plugged back to 6565 feet and perforated the Bartlesville sand opposite 6530-54 feet with a little hope of making a producer. This brings the total number of dry holes in the field to 21 for an average of 1 failure to every 32 producers.

Canadian County: About 3½ miles north of Piedmont, Fox & Fox's Simpson 1, CSE SW 9-14n-5w, which had been abandoned temporarily several months ago, may open a new Bartlesville sand pool. At 8385 feet, total depth, operators went back into the hole after a farmer opened a valve at the well head and the well started to flow oil by heads at the rate of 80 barrels in 45 minutes through ¼-inch choke. Tanks were erected and the well flowed 35 barrels of oil in 1 hour and then 40 barrels in 1½ hours before going dead. Operators will test through perforations in the Bartlesville sand topped at 7100 feet.

West Moore: Skelly Oil Company gave this field a northeast extension with Davis 1, SE SE NW 30-10n-3w, Cleveland County. It filled with 3000 feet of oil on drill-stem test from 7877 to 7898 feet with the tool opened 50 minutes. Production is from Bartlesville sand topped at 7894 feet. The hole was reconditioned and operator is drilling ahead to the second Wilcox sand. Mid-Continent Petroleum Corporation's Carr 1, SW SE NW 29-10n-3w, was washed in from the Bartlesville sand flowing 425 barrels of oil in 18 hours through choke.

Garfield County: The Atlantic Refining Company's Schmidt 1, SE SE SW 25-24n-5w, rank wildcat about 3 miles southwest of Hunter and 15 miles from production, was drilling to the second Wilcox sand after showing considerable oil on drill-stem test from the first Wilcox at 6108-6153 feet. The well attracted attention some weeks ago when it encountered heavy gas at 1345 feet which blew the mud out of the hole. It is being drilled on a 5000-acre block and since formations are checking high may be carried to the Arbuckle. Location is on the northeast limb of the Anadarko Basin.

Lincoln County: Four States Oil Company has a prospective pool opener at Watson 1, SE SE NE 13-15n-4e, about 6 miles northwest of Chandler. With Prue sand logged at 3540 feet and drilled to 3550 feet, total depth, operator tested nearly a million cubic feet of gas plus 50 barrels of oily daily. Testing continues.

Hughes County: Dr. T. J. Lynch opened a new gas area 5 miles southeast of Wetumka when Poe 1, CSW SE 32-9n-11e, tested 4 million cubic feet of gas daily from Pennsylvanian sand between 1650-82 feet. Although not a large well, the strike is significant as it is in an area where there appears to be a gas trend extending northeast-southwest.

Ad Valorem Forum

The annual Ad Valorem Tax Forum of the Mid-Continent Oil & Gas Association will be held January 17 and 18 at the Blackstone Hotel in Fort Worth.

F. N. Shriver, chairman, and Marshall L. Edwards, vice chairman will preside. The agenda of the Forum will cover state and local tax trends.

Wells Completed in the United States in Week Ended Nov. 24, 1945

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second issue of each month. More detailed data on wildcats published in third issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS *Oil	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative This Year	Cumulative Last Year
Alabama	....	....	....	1	1	....	....	....	....	....	1	2	34	34
Arizona	....	....	....	....	....	....	....	....	....	....	....	....	....	6
Arkansas	....	....	....	....	....	....	....	....	....	....	....	8	173	205
California	32	....	....	2	34	....	....	....	5	5	39	28	1,930	1,846
Colorado	....	....	....	....	....	....	2	....	....	2	2	1	45	25
Florida	....	....	....	....	....	....	....	....	....	....	....	....	14	3
Georgia	....	....	....	....	....	....	....	....	....	....	....	....	6	8
Illinois	29	....	....	15	44	....	....	....	8	8	52	33	1,700	1,813
Indiana	....	....	....	....	....	....	....	....	....	....	....	3	278	305
Iowa	....	....	....	....	....	....	....	....	....	....	....	....	1	2
Kansas	20	6	1	7	34	....	....	1	4	5	39	31	1,542	1,556
Kentucky	....	....	....	....	....	....	....	....	....	....	....	15	547	736
Louisiana	11	1	....	7	19	....	....	....	3	3	22	33	956	700
North Louisiana	9	1	....	3	13	....	....	....	3	3	16	15	393	258
South Louisiana	2	....	....	4	6	....	....	....	....	....	6	18	563	442
Michigan	5	....	....	4	9	....	....	1	4	5	14	25	701	619
Mississippi	4	....	....	1	5	....	....	....	4	4	9	7	345	188
Missouri	....	....	....	....	....	....	....	....	....	....	....	1	46	39
Montana	5	1	....	....	6	....	....	....	....	....	6	5	221	306
Nebraska	....	....	....	....	....	....	....	....	....	....	....	....	3	15
New Mexico	1	....	....	2	3	....	....	1	....	1	4	6	379	373
New York	....	....	....	....	....	....	....	....	....	....	....	25	1,004	1,137
North Carolina	....	....	....	....	....	....	....	....	....	....	....	....	1	....
Ohio	....	....	....	....	....	....	....	....	....	....	....	7	867	907
Oklahoma	35	8	....	4	47	....	....	1	5	6	53	57	2,116	1,663
Pennsylvania	....	....	....	....	....	....	....	....	....	....	....	46	2,883	2,778
South Dakota	....	....	....	....	....	....	....	....	....	....	....	....	1	....
Tennessee	....	....	....	....	....	....	....	....	....	....	....	....	3	9
Texas	40	6	1	26	73	1	4	....	26	30	104	168	6,578	5,560
E.Tex.Bor. Co.'s	....	2	....	....	2	....	....	....	....	....	2	4	109	31
E. Texas Field	....	....	....	....	....	....	....	....	....	....	....	....	....	4
Rest of E. Texas	4	....	....	....	4	....	....	....	2	2	6	7	220	252
North Texas	9	....	1	15	25	....	2	....	6	8	33	39	1,602	1,264
W. Central Tex.	3	1	....	5	9	....	....	....	3	3	12	12	430	381
West Texas	....	....	....	....	....	....	1	....	5	6	6	40	1,544	1,460
Tex. Panhandle	....	2	....	....	2	1	....	....	....	....	3	23	550	286
G. Coast, Upper	9	....	....	2	11	....	1	....	3	4	15	13	640	544
G. Coast, Lower	10	1	....	2	13	....	....	....	4	4	17	26	959	831
Southwest Texas	5	....	....	2	7	....	....	....	1	1	8	3	438	412
S. Central Tex.	....	....	....	....	....	....	....	....	2	2	2	1	86	95
Utah	....	....	....	....	....	....	....	....	....	....	....	....	....	1
Washington	....	....	....	....	....	....	....	....	....	....	....	....	1	....
West Virginia	....	....	....	....	....	....	....	....	....	....	....	17	710	874
Wyoming	5	....	....	....	5	....	1	....	2	3	8	7	178	154
Total U. S.	187	22	2	69	280	1	7	4	61	72	353	525	22,963	21,862

* Includes distillate wells. † Includes salt water disposal wells.

☆ Kansas

Sumner County Gets Strike; New Gas Area Is Opened

Oil strike noted east of Zyba; Barber County gets new gas area; Vohs pool has Lansing lime production; several wildcats look promising.

Sumner County: Paul Hatfield has opened an oil pool 6 miles east of the Zyba field, successfully completing Bellman 1, NE NE SW 15-30n-1e, for an estimated 250 barrels of oil daily from Simpson sand between 3795-3810 feet. Originally drilled by Aladdin Petroleum Company and abandoned as a dry hole in the Arbuckle lime at 3916 feet, total depth, Hatfield took over the operation and perforated after making an electrical survey of the hole. The oil tests 51-gravity.

Barber County: A mile and a half southwest of Marjorie gas field, Drillers Gas Company completed Pearl Lake 1, SW SW 1-31s-14w, for an estimated 5 million cubic feet per day to open a new area which may link up the Marjorie and Hargis pools. Production is from Viola lime topped at 4400 feet and perforated between 4401-09 feet. If the well connects the two pools it will result in a field about 8 miles long.

Rooks County: Commercial Lansing lime production has been developed in the Vohs pool at British American Oil Producing Company's Perotte Estate 1, NE SE SE 11-10s-19w. Originally completed in the Arbuckle for 164 barrels of oil per day, it was plugged back to 3508 feet and casing perforated between 3339-43 feet opposite the Lansing. Completed, the test made 537 barrels of oil per day on the pump.

Marion County: Alpine Oil & Royalty Company was preparing to test a promising show in Baxter 1, NE NW SW 30-19s-4e, wildcat about ½-mile northwest of Marion. Operator reported free oil in the Viola lime between 2574-82 feet and set 5-inch casing on top of the formation at 2574 feet. Drilled on a 1000-acre block, the wildcat is checking high with nearby dry holes.

Barton County: Globe Oil and Refining Company's Kruger 1, SEC SW 23-20s-12w, was preparing to test an Arbuckle lime showing after recovering 30 feet of oil and 120 feet of oil-cut mud on a 30-minute drill-stem test between 3363-87 feet. The wildcat is a mile west of the Silica pool.

Cowley County: A mile and a half west of the Gueda Springs pool, Kanotex Refining Company is opening a new pool at Suttle 1, NW SW NE 7-34s-3e, last reported flowing 6 barrels of oil daily from the Bartlesville sand between 3379-3400 feet. Operator topped the sand at 3379 feet, several feet higher than the nearest dry hole. Testing continues with prospects that the well may be completed for at least 200 barrels of oil per day.

Sheridan County: Continental Oil Company plans to resume operations at Strat 19, 16-9s-26w, drilled to 4608 feet and temporarily abandoned months ago. Oil shows were reported in the Lansing lime section between 3862-65, 3875-80 and 3946-56 feet. Continental has been doing considerable seismograph and core drilling work in the area where geologists believe several good oil and gas fields will be found. The test is about 6 miles southwest of the Studley pool.

Missouri

Fox et al's Fee 1 SEc SW 12-51n-35w, about 4 miles southwest of the Parkville gas area, Platte County, is dry and abandoned at 690 feet, total depth, in the Cherokee sand. Base of the Kansas City-Lansing was logged at 394 feet and the Marmaton was topped at 552 feet. No shows were reported.

Putnam County: Dan McLaughlin et al's Johnson 1, SE SW 14-65n-21w, wildcat 17 miles northwest of Milan, is a dry hole at 1690 feet, total depth. Reported tops were: Cherokee, 250 feet; Chouteau, 945 feet; Kinderhook, 1039 feet; Krimmswick, 1458 feet; and Decorah, 1655 feet.

Atchison County: Dan Short abandoned Tarkio College 1, SE SW NE 16-65n-41w, at 1410 feet, total depth. Kansas City lime was topped at 637 feet. No shows were reported.

☆ West Texas

Prolific Ellenburger Flow Tapped in Fullerton Field

Prolific oil flow from Ellenburger tapped in west central sector of the Fullerton field; North Goldsmith field deep prospect shows Devonian possibilities; Devonian may produce on northeast flnak of the TXL field.

Andrews County: Fullerton Oil Company's Wilson 9-A, C SE NW PSL 16, Block A-32, offsetting 7000-foot Clear Fork production in the Fullerton field, proved the Ellenburger zone in flowing at a rate of 80 to 100 barrels of high-gravity oil hourly through tester at 9900-35 feet. The well was deepened to 9945 feet, where it is awaiting pipe to complete. The Ellenburger was entered near the 9905-foot level with elevation of 3372 feet, being 794 feet high to Magnolia Petroleum Company's Ralph 1-A, a 10,991-foot failure 2 miles west by north and off the structure. Wilson 9-A failed to produce in the 8400-foot Devonian, which has accounted for 9 flowing wells on the south end of the structure. It was also dry in the Simpson series, topped at 9235 feet, or 728 feet high to the west outpost failure.

Mid-Continent Petroleum Corporation's University 3-11, C NW NE Sec. 29, Block 13, southeast edge of the Fullerton-Devonian field, was drilling unidentified lime and shale at 10,214 feet, or 400 feet below the subsea top of the Ellenburger logged by the pending discovery completion. The latter is 81 feet higher on surface elevation.

Sinclair Prairie Oil Company's Bedford 1, 1 1/16 miles southeast of the recently completed Bedford field dual-pay discovery, was drilling Simpson shale at 10,935 feet, having tested dry in Silurian, topped at 10,045 feet, or 316 feet low.

Three Bar Field: Stanolind Oil & Gas Company's University 1-BB, southeast offset to its discovery, flowed 170 barrels oil natural daily through ¼-inch choke from perforations at 8140-96 and 8216-50 feet, with pipe cemented at 8296 feet, or 11 feet off bottom. The upper and most effective zone of porosity and saturation in the Devonian, topped at 8013 feet, or 10 feet low by revised measurement, has not been tapped. The discovery also is producing from the lower zone.

Ector County: Stanolind Oil & Gas Company's Williamson 1, northwest edge of the North Goldsmith field, entered the Devonian at 8045 feet with elevation at 3302 feet, and some evidence of oil was noted in samples recovered in drilling and coring to 8120 feet. A drill-stem test at 8120 feet proved dry, and second test at 8077-8165 feet was only partially successful with traces of oil appearing in the recovery. This showing probably will result in the landing of pipe for a test after deepening to Ellenburger.

Humble Oil & Refining Company's Cummins 1, midway between the North Goldsmith and Goldsmith fields, was abandoned with water in Ellenburger at 9165-9235 feet.

The Texas Company's T. P. Land Trust-Fraser 1-D, 1½ miles southeast of Ellenburger production in the TXL field and structurally low, was drilling dry lime at 9875 feet or 22 feet below the total depth of the Ellenburger producer. This outpost causes a sharp revision downward of the probable productive acreage in the southeast portion of the field, but logged sufficient oil-pay in the 8500-foot Devonian to warrant a production test through casing. It is the first to indicate that a belt of Devonian production, currently restricted to the southwest flank of the Ellenburger high, may also prevail on the northeast flank.

Active Drilling: The TXL field has 28 tests drilling and 7 wells in process of completion, while 4 additional tests are rigging up and 4 locations are scheduled. This activity is surpassed by the Keystone-Ellenburger field, which has 38 drilling, 1 testing and 3 locations, besides a half dozen rigs at work on the 3 Permian zones. Gulf Oil Corporation is drilling 13 of the tests in the Keystone-Ellenburger area, while Sid Richardson and Perry Bass have 11 rigs in operation.

☆ North Texas

Belcherville Area May Get Northwestern Extension

Belcherville area, Montague County, may be extended 1½ miles northwest from new oil zone; Young County's blowout well to be plugged as safety measure; Archer County has deep lime prospect.

Montague County: S. D. Johnson et al's Crenshaw 1, W. Wallace survey A-834 and 1½ miles northwest of the recent discovery, tested 100 feet of rotary mud, 80 feet of oil-cut mud and a trace of salt water, with shutin bottom-hole pressure of 250 pounds, from Bend conglomerate at 5551-63 feet. Electrical formation survey will be run to determine if the zone warrants setting pipe. This zone is equal to the lower pay logged by the discovery and an offset awaiting completion. However, Crenshaw 1 missed the upper pay due to its low structural position.

National Associated Petroleum Company's Alexander 1, A. Buffington survey and 2 miles south of Nocona, was drilling shale at 5550 feet after passing up several nominal zones of saturation in the Strawn series.

Continental Oil Company's Pipkin 1,

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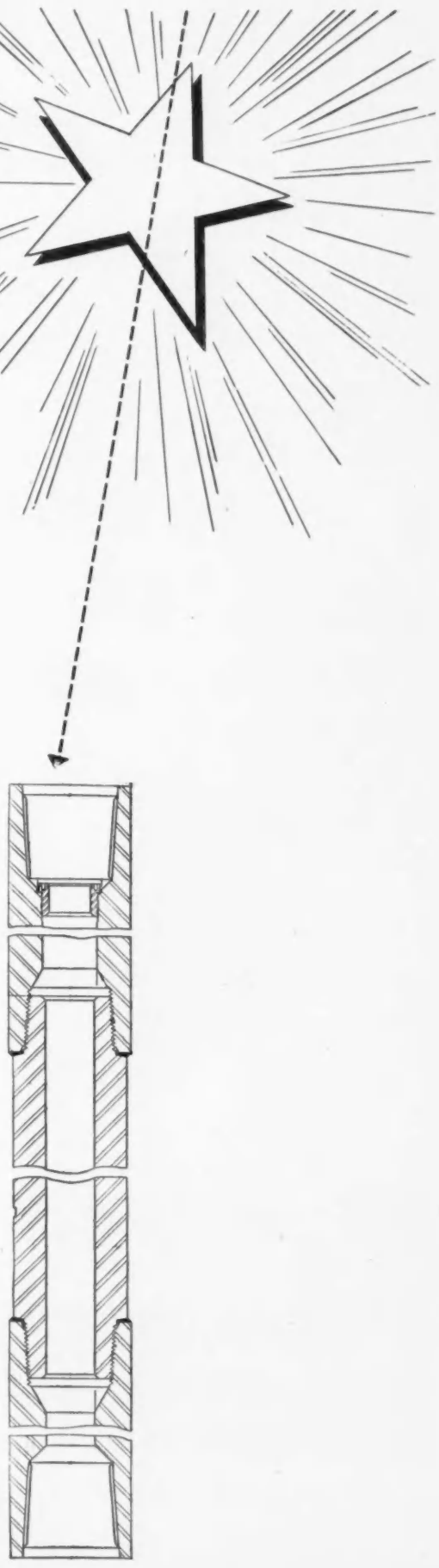

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west offset to the most northerly of 3 flowing producers in the McNutt pool, flowed 140 barrels of oil through choke on 6-hour test after using acid through perforations at 6690-6712 feet in Viola, topped at 6691 feet. This is the only Viola lime producing area in the state.

Young County: L. T. Burns et al's Kunkel 1, south offset to the Crain pool discovery, was ordered plugged after flowing wild for 26 hours from Mississippian at 4890-99 feet. A twin test has been authorized.

Throckmorton County: Panhandle Refining Company's Johnson 1, NW SE TE&L Co. Sec. 2194, and 3 miles north by east of the North Ewalt area, logged possible pay at 5139-42 feet in drilling to 5151 feet. Electrical formation survey will be made to determine whether to set pipe for production test. The Bend was entered at 4410 feet, or 239 feet low to nearest producer, while top of Mississippi was called at 5124 feet.

Archer County: Bridwell Oil Company's Oil Investment Company 1-F, Block 125, John Richards survey and within a cluster of deep failures that showed oil, cemented 7-inch casing on botom at 4925 feet after logging 3 zones of possible production. This wildcat entered the Bend at 4855 feet with show of gas to 4866 feet. Oil-saturated lime was logged at 4866-72 feet, and possible gas in hard lime at 4872-4925 feet.

Fred M. Manning, Inc.'s, Mahler 2-A, northeast offset to the 2-well Ellenburger pool opened recently between the Hull-Silk and Vogtsberger fields, tested water from perforations at 5530-36 feet in Ellenburger, topped at 5498 feet. Perforations will be made higher in the section.

Jack County: Continental's Cox 1, 1½ miles northeast of Gibtown and high structurally for the area, was drilling shale and lime at 5440 feet. This wildcat entered the Bend at 4040 feet, and tested dry in conglomerate at 4409-57 feet, although the zone logged oil saturation.

King County: The Ohio Oil Company's Pitchfork, Sec. 1, Somervell County School Lands, failed to reach its Ellenburger objective due to entering granite at 6957 feet with elevation of 1945 feet. Nominal gas flow with salt water was passed up at 5100-35 feet in the Strawn.

☆ Texas Panhandle

Wheeler County Test Fails To Reach Its Objective

Sinclair Prairie Oil Company's Henderson 1, C NW NW H&GN Ry. 16, Block A-8, Wheeler County wildcat and deepest test in the Anadarko Basin sector of the Texas Panhandle, was abandoned in conglomerate at 8502 feet without reaching its Ordovician objective.

In Ochiltree County, Olney F. Flynn et al's Hoover-Patten 1, SW SW NE H&TC Ry. 213, Block 43, currently the deepest active test in the district, was scheduled to resume with cable tools at 6153 feet after cementing protection string of 7-inch casing at 6035 feet.

Danciger Oil & Refineries, Inc.'s Powell-Beck 33, inside location for the Gray County area, flowed 1978 barrels of oil natural from granite wash at 2837-78 feet. This is the largest well recorded in the district for several years.

Humble Changes Made

Several changes in the supervisory forces of the production department of the Humble Oil & Refining Company have been announced.

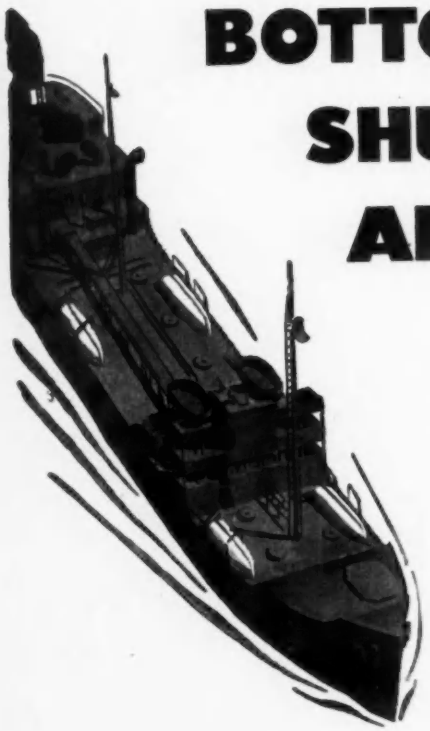
Promoted to district civil engineers were Rupert F. Carroll, Willamar District, Raymondsville, Texas; James E. Ozburn, London District, Overton, Texas, and Verne E. Wesley, Scott & Hopper District, Encino, Texas.

☆ East Texas

Wildcat Has Showing from Deep Woodbine Structure

Leon County wildcat has oil showing from deep-seated Woodbine structure; major extension given Sand Flat field; record-depth producer for state attempting to boost gas yield.

Leon County: Claude Bell et al's Brown & Carson 1, Thos. H. Garner survey and 3 miles southeast of Flynn, logged oil and gas showings in drilling about 200 feet of broken Woodbine sand and shale section to 7303 feet. Oil showings appeared on pits with rotary returns. This wildcat entered the Pecan Chalk at 5377 feet and Austin Chalk at 6030 feet, with top of Woodbine near the 7100-foot level. Five-inch pipe was cemented at 7100 feet to test open hole. Considerable trading in royalty and leases followed the showing. Bell assembled a block of 7000 acres for the



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drilling of this deep test and nearby shallow tests.

E. H. Robertson et al's Wilson & Reding 1, Eli Chandler survey and near Cairo, Leon County, was drilling sandy-shale at 8140 feet with some doubt as to whether the Woodbine had been reached. Pecan chalk was logged at 6590-6973 feet and Austin chalk at 7434-7757 feet with elevation of 252 feet.

Houston County: Hunt's Houston County Timber Company, Magnolia 1, W. M. Connor survey, entered the Midway at 4447 feet with elevation of 338 feet, and cemented protection string of 9-inch casing at 4464 feet.

These deep Woodbine projects in Leon and Houston counties involve the north portion of an extensive exploratory campaign near the intersection of the East Texas and Upper Coast districts for Woodbine production. Activity extends into Madison, Walker and Trinity counties. Participants predict a commercial strike would in all probability embrace a major producing area.

Smith County: C. L. Wickliffe et al's Hackett-Pure 1, Samuel Leeper survey, heralds a major north extension for the Sand Flat field in flowing by heads from perforations at 7277-84 feet in Paluxy, topped at 7264 feet with elevation of 478 feet. This outpost was temporarily abandoned at 9852 feet in July, 1943, and was plugged back and tested on the strength of the expansion of the Sand Flat field to the north.

Sinclair Prairie Oil Company's Shofner 1, Chapel Hill field, was attempting to perforate drill pipe cemented on bottom at 13,577 feet after testing high-pressure gas through 1¼-inch tubing lowered inside the stem, which had been cut twice near bottom but could not be pulled. The gas is dry and odorless but is pronounced inflammable.

Morris County: Hunt Oil Company's Robison 1, John Brandon survey and 2½ miles northeast of Daingerfield, was drilling shaley-lime at 5030 feet. This Travis Peak prospect showed considerable thinning of section between the Sub-Clarksville, topped at 4024 feet, and the Georgetown, which was entered at 4428 feet, or 154 feet high to nearest failure. Numerous companies with acreage in the area are supporting the test.

Falls County: H. C. Cockburn and Zephyr Oil Company's Dr. Buie 1, second deep test for the Stranger prospect, prepared to perforate opposite indicated gas-distillate pays in the Cotton Valley, topped at 5284 feet. The well is bottomed in Smackover, topped at 6460 feet, and drilled to 7063 feet.

Hopkins County: Delta Drilling Company's Livingston 1, 5 miles west by south of the Pickton field, entered the Glen Rose at 6565 feet, and was drilling sandy-shale at 6940 feet. This wildcat passed up possible oil production in the 4000-foot Sub-Clarksville.

Hunt County: Paul B. Scott et al's Irwin 1, Mary Keys survey and a mile north of Quinlan, entered dry Woodbine at 2940 feet with elevation of 479 feet, and was drilling sandy-shale at 3410 feet on Paluxy contract.

Anderson County: Humble Oil & Refining Company's Freeman 1, Travis Peak prospect for the Brushy Creek area, tested salt water in Woodbine at 5290-5350 feet, and was drilling sandy-shale at 5480 feet.

☆East Texas Border

Panola Wildcat Shows for Pettit Oil Production

Panola wildcat shows for Pettit oil production; New Shelby County wildcat started.

Panola County: The Ohio Oil Company's J. O. Britton 1, William Taylor survey, is testing as a wildcat oil discovery. Perforations from 6542-68 feet in the Petit lime, after treatment with 10,000 gallons of acid, flowed 27 barrels of 42.1-gravity oil in 1½ hours. Well first cleaned into pits and was shut in for 12 hours. On earlier tests the well failed to flow. Bridge plug was set from 6542-68 feet, and crews plan to drill out cement and test all perforations in the Pettit. The test is 6 miles from Arkansas-Louisiana Gas Company's Langford 1, nearest Carthage producer.

Shelby County: Hiawatha Oil Company is drilling below 250 feet in Pickering Lumber Company 1, W. J. Brittian survey, proposed 7500-foot wildcat, 2000 feet north and west of M. E. Davis' Pickering Lumber Company 1, abandoned at 7500 feet without commercial showings.

Harrison County: Stanolind Oil & Gas Company's Hattie Cole 1, Charles Taylor survey, is drilling in shale and lime below 6745 feet. A drill-stem test from 5635-57 feet recovered 1100 feet of slightly gas-cut mud, with bottom hole pressure of 100 pounds. Cores from 6531-39 feet recovered shale and lime.

Marion County: Rogers Lacy's wildcat Scott 1, L. A. McLaughlin survey,

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is coring below 6878 feet in sand.

Magnolia Petroleum Company's S. L. Orr 1, R. B. Fowler survey, is below 4940 feet. Blossom was topped at 3078 feet, Georgetown at 3770 feet.

Texoma Producing Company's Turner-Hicky 1, Robert Potter survey, wildcat, is below 2745 feet, without showings.

Oil and Gas Tax Committee Schedules December Meeting

The annual forum of the Standing Committee on Federal Taxation of the Mid-Continent Oil & Gas Association will be held in Tulsa, December 4 and 5, H. D. Mahin and T. H. Marshall, general chairman and general vice-chairman respectively, have announced.

☆ South Central Texas

Shallow Test Staked Near Weberville, Travis County

Shallow wildcat spotted in Travis County; Atascosa County wildcat logs gas and condensate show; tests in other areas active.

Travis County: A 1400-foot wildcat has been staked by E. R. Marts west of the Colorado River and about a miles southwest of Weberville. It is the M. H. Doats 1 on a 207-acre tract, J. F. Weber survey.

Atascosa County: Humble Oil & Refining Company's Henry Schorsch 1, Edward Estede survey, wildcat southwest of Jourdanton, is coring below 7361 feet and is credited with having logged a gas and condensate show in the Edwards lime at 7330 feet. A drill-stem test at 7355-61 feet recovered 218 feet of gas-cut mud.

Guadalupe County: Meon V. Manry's Effie Williams et al 1, wildcat in the James Alley survey, was drilling below 2398 feet in sand and shale.

Gonzales County: Quintana Petroleum Corporation's Anna Spahn 1, wildcat 4 miles northwest of Gonzales, was drilling in sandy shale at 8265 feet.

Bexar County: Chenoweth & Harroun's Max Blum 1, deep test in the Gas Ridge area, was drilling below 5670 feet after running an electrical log at 5650 feet.

Kerr County: The Ohio Oil Company's Charles J. Robinson 1, wildcat in the southeastern part of the county, was last reported fishing for bailer at 5070 feet.

Carter Transfers

Transfer of three production department veterans of The Carter Oil Company was announced by J. R. McWilliams, vice president in charge of production. R. M. Hurt, district superintendent of the Vicksburg, Mississippi, district, has been named assistant division superintendent of the Central Division at Seminole, Oklahoma; E. A. Rose, district superintendent of the Great Bend, Kansas, district, transferred to Vicksburg to replace Hurt; W. D. Maxwell, district superintendent of the Elk Basin, Wyoming, district, named district superintendent of the Great Bend district.

☆ Southwest Texas

6500-Foot Wildcat Is Located By Howell in Duval County

Howell to drill Duval County wildcat; Sejita field outpost staked; Webb County wildcat has gas show.

Duval County: H. H. Howell of Alice, Texas, has located a 6500-foot wildcat 2 miles east of Benavides. It is the George B. Parr 1 on a 485-acre lease in Survey 185.

Argo Oil Corporation's John E. Murphy 1-C, wildcat 5 miles northeast of Seven Sisters, was drilling below 6500 feet in shale.

About 1½ miles east of the Sejita field, Don Marsh and associates staked Dolores Garcia 1 on a 592-acre tract in Share 4, Santa Cruz de Concepcion Grant, abstract 173.

Starr County: The Lockhart field received a setback with the abandonment of Lockhart & Company's Ida Davis Estate 1, Porcion 79, Share 73, at 3978 feet.

Sun Oil Company's Reilly Heirs J. Garcia field, was completed for 63 barrels of oil daily through a ⅛-inch choke from open hole at 3955-56½ feet.

McMullen County: Mary Martin Dillon has staked B. C. Claunch 8-A on a 200-acre tract in the Michael Hely survey, Calliham field.

Webb County: Humble Oil & Refining Company's Mary Kate Withers 2, wildcat 18 miles east of Encinal, was drilling below 6600 feet in sand and shale after a drill-stem test at 6454-77 feet recovered gas-cut mud.

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☆Lower Texas Coast

Final Completion Made on Calhoun County Discovery

Final completion made on new Calhoun County discovery well; Willacy County wildcat recovers some oil; new Kleberg County field indicated on King Ranch.

Calhoun County: Final completion has been made at Quintana Petroleum Corporation's W. A. Shofner Estate 1, oil discovery 5 miles northwest of Port Lavaca. Drilled to 8613 feet, operator landed 5½-inch casing at 5821 feet and perforated in the Frio formation at 5710-25 feet. The well flowed 74.25 barrels of 37.3-gravity oil daily through a ⅛-inch choke with a tubing pressure of 590 pounds and casing pressure 730 pounds. Quintana has staked Henry C. Boyd 1 on a 78-acre tract southwest of the pool opener.

Willacy County: Humble Oil & Refining Company's W. S. Murphy 1, a mile north of San Perlita, was squeezing perforations at 9825-32 feet after a 45-minute drill-stem test showed a strong blow and recovered 3650 feet of mud, water and oil. About 30 percent of the fluid recovered was oil.

Kleberg County: Humble's King Ranch-Monte Negra 1, Santa Gertrudis Grant, wildcat 4 miles southwest of Kingsville, has indicated the opening of another producing area on the King Ranch by recovering 830 feet of oil on a drill-stem test at 7056-64 feet. The test now bottoms at 7067 feet.

Live Oak County: Wright & Christie of Houston have staked Mrs. M. A. Hinnant 2 as an east offset to the discovery well in the Hinnant field. It is on an 80-acre tract in the Edward Quinn survey.

Karnes County: A new wildcat is the W. E. Kinnear of Beaumont J. R. C. McDougal et ux 1, about 2½ miles southeast of Runge. It is in the William L. Taylor survey and is projected to 7200 feet.

Jackson County: Wildcats have been staked by Crown Central Petroleum Corporation and Wirt Franklin Petroleum Corporation.

Crown Central's test is the Lucille Hensley Seale 1, about 6 miles south of Lolita on a 718-acre tract in the J. H. Bell survey. Wirt Franklin will drill I. B. Clements 1 about 2 miles southeast of Cordele in the T. H. P. Heard survey.

Office Opened

Thompson-Carr, Inc., drilling contractors, and West and Cole, gasoline and cycling plant engineers, have opened new offices at 3503 Montrose Boulevard, Houston.

☆Upper Texas Coast

Production Pipe Set in Montgomery County Test

Production pipe set in Montgomery County wildcat; Hardin County well still testing; Bishop to drill Walker County wildcat; extension indicated in Colorado County pool.

Montgomery County: Humble Oil & Refining Company's E. L. Bender 2, wildcat in the Rayford area, bottoms at 7554 feet and 5½-inch casing has been landed at 6064 feet for a production attempt.

Hardin County: Pan American Production Company's Olive Sternenberg Lumber Company 1, wildcat northwest of the West Silsbee field, is swabbing at 10,049 feet. A drill-stem test in open hole developed a flow of 150 barrels of 44.6-gravity oil daily with a working pressure of 2500 pounds.

Matagorda County: Montecito Oil Company's Denman Kountz and L. T. Stewart 1, wildcat in the Midfields area, is coring in the Frio zone with a gas show reported at 3400 feet.

Sun Oil Company's Strnadel 2, I&GN Survey, was drilling in a sidetracked hole at 6380 feet after developing a fishing job at 8692 feet.

Walker County: Harold C. Bishop has spotted a 7500-foot wildcat test southwest of New Waverly. It is the D. R. Hardy 1 on an 81-acre tract in the John Sadler survey.

Harris County: Humble's Milo 10, Tomball field, deepest active test on the coast, was drilling below 14,835 feet.

Magnolia Petroleum Company's Warren Ranch 3, on the southwest flank of old Hockley dome, was still testing after previous tests at 6252-57 feet and 6238-44 feet showed oil and water.

Trinity County: Magnolia's Bolton 2, wildcat test 3 miles west of Glendale, was drilling below 11,320 feet in sandy shale. The operator's Gibson 1, wildcat test in the Sanchez survey, was drilling in shale and lime at 4720 feet.

Colorado County: Skelly Oil Company and Warren Petroleum Corporation's Clara Berthold 1, northwest of the discovery well in the Hamel field, bottoms at 9562 feet with 5½-inch casing set at 9170 feet. Several Wilcox sands were reported logged. The Hamel 1 discovery well was completed in the Wilcox at 9052-69 feet.

Brazoria County: On the northwest flank of West Columbia, Fidelity Oil and Royalty Company's Wilson Unit George Tennille survey, was preparing to spud.

Also slated to start operations soon was Magnolia and J. S. Abercormbie Company's H. B. Vezey et al Unit 1, east of production in the Old Ocean field.

San Jacinto County: Navarro Oil Company's Foster Lumber Company 3, Cold Spring field, is testing in the Wilcox formation after setting casing at 7928 feet, total depth.

☆South Louisiana

Jefferson Parish Wildcat Makes Completion Attempt

Deep wildcat in Jefferson Parish testing; flank test slated northwest of Napoleonville; slight show reported in Evangeline Parish well.

Jefferson Parish: The Texas Company's State 1, wildcat in East Barataria Bay, has perforated casing at 12,086-108 feet and was preparing for initial completion attempt. This wildcat was drilled to 14,490 feet and 5½-inch casing set at 12,164 feet. Previous perforations at 12,084-086 feet were squeezed.

Allen Parish: Humble Oil & Refining Company's Mrs. J. A. Bel Estate, 33-

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The Reconstruction Finance Corporation, a disposal agency designated by the Surplus Property Administration, will receive proposals for the purchase or lease of the following properties in the interest of continued employment. These properties were acquired by various agencies of the government for production in the war effort, and are now, or shortly will be, declared surplus to government needs.

Listing of these plants by name of lessee is for identification purposes only, and has no connection with the lessees' own plants or facilities.

●

PANAMA CITY, Florida (Plancor 1595)
General American Transportation Corporation

Approx. 360 acres. Administration Building and Boiler House. Three Tank Car Loading Racks, Trackage, Four Unloading Docks. Nine 55,000 bbl. and one 80,000 bbl. Steel Storage Tanks equipped with Graham Suction Heaters. Machinery, equipment and tools. Office furniture and fixtures. Water reservoir. Utilities.

JACKSONVILLE, Florida (Plancor 1595A)—General American Transportation Corporation

Approx. 229 acres. Administration Building. Boiler House. Garage and Warehouse, and Field Office Building. Two Tank Car Unloading Racks, Trackage, Two Docks. Two 55,000 bbl. and two 80,000 bbl. Steel Storage Tanks equipped with Graham Suction Heaters. Pumping Stations. Machinery, equipment and tools. Office furniture and fixtures. Utilities.

●

Persons interested in obtaining full information about these properties, and in negotiating for their purchase or lease, should communicate with the local RFC disposal agency listed below. All data contained herein are necessarily abbreviated and subject to correction. They are not intended for use as a basis for negotiation. RFC reserves the right to reject any or all proposals or offers received for the above properties.

Reconstruction Finance Corporation

SURPLUS PROPERTY DIVISION
WESTERN UNION BUILDING
JACKSONVILLE 2, FLORIDA
Phone: 5-1650

142-T

5s-4w, wildcat in the Oberlin area, was coring in sand at 12,840 feet.

Assumption Parish: Continental Oil Company was preparing to move in material for an important wildcat on the northwest flank of Napoleonville dome, about a mile north of production. The test is the Whitecastle Lumber & Shingle Company 1, and projected depth is 11,000 feet.

St. Tammany Parish: The Atlantic Refining Company is preparing to drill a 12,000-foot wildcat in Lake Ponchartrain. It is the State 1-A in Twp. 9s-12e.

Evangeline Parish: Magnolia Petroleum Company's Morein 1, wildcat southeast of the Pine Prairie field, was coring below 10,730 feet in sandy shale. A thin sand section in the Cockfield below 9100 feet is credited with carrying some oil. This test is projected to the Wilcox formation.

Calcasieu Parish: Union Oil Company of California's F. H. Gray 2-A, old Vinton field, has been completed for 128 barrels of 32.6-gravity oil daily through a ⅛-inch choke from perforations at 5404-13 feet. Gas-oil ratio was 290/1.

St. Charles Parish: Union's Milliken & Farwell 1, 26-12s-20e, wildcat on the Hahnville prospect, has spudded and was drilling below surface casing set at 2702 feet.

St. Landry Parish: Crosby Drilling Company and Lyle Cummins' Eugene Gordon 1, Wilcox sand wildcat test in 2-3s-6e, is drilling below 4150 feet in shale on a 10,000-foot contract.

Beauregard Parish: Sohio Petroleum Company's Lutcher-Moore 3, semi-wildcat in the Mystic (Fields) area, has been abandoned after running an electrical log at 8770 feet.

New Louisiana Map

The 1945 edition map of Louisiana has been completed by Dr. John Huner, Jr., state geologist of the Louisiana Geological Survey. The map is in 3 colors, with a scale of 500,000 feet to one inch, and is 38 inches by 41½ inches in all. Oil and gas fields of the state are shown exactly to scale.

Copies of the map, now ready for distribution at $1.10 per copy, may be obtained by writing to Louisiana Geological Survey, Geology Building, Louisiana State University, University Station, Baton Rouge, Louisiana.

☆ North Louisiana

Benton Field Extension Project Is Tested Further

Testing continues in Benton field extension; first Delhi pumper completed; Concordia Parish to get 2 wildcat Tuscaloosa tests.

Bossier Parish: Grady H. Vaughn has completed 4-day tests at Katie Odom Padgett 1, C SW NE 1-20n-13w, new oil extension of the Benton field. The tests averaged between 115-20 barrels of 42-gravity oil per day on variable chokes, with flow accompanied by a million cubic feet of gas daily. Available storage is filled and test is shut in at 8200 feet. No tests have been made on the 228 perforations at 8012-50 feet in the Cotton Valley "D" sand.

Barnsdall Oil Company-Sohio Petroleum Company are drilling below 3460 feet in Carter-Burton 1, C NW NW 26-23n-13w. Cores from 2670-93, 3080-90 feet recovered shale and salt water sand, respectively.

Barnsdall-Sohio's Crystall Oil Refining Company 1, 28-21n-11w, now is below 5550 feet toward its 9000-foot goal. The well was temporarily shut down waiting on fuel when an explosion in the Cotton Valley field cut off its supply.

Richland Parish: Two dry holes were reported by Roy T. Sellers from West Delhi. They are Roy Williams 2, SW NE 32-17n-8e, abandoned at 3001 feet; and Roy Williams 1-A, C NW SE NE 7-16n-8e, abandoned at 3101 feet.

C. H. Murphy, Jr., and Sun Oil Company completed the first pumping well for Delhi at W. J. Garrett 1, 22-17n-9e. Perforated from 3253-57 feet, the well is pumping 19 barrels of oil per day. Total depth is 3551 feet.

Concordia Parish: Sid W. Richardson has applied for permits to drill 2 Tuscaloosa tests: Madison Oil & Development Company A-1, 34-6n-9e, and Madison Oil & Development Company B-1, 16-6n-8e, 7 miles west and 3 miles north of the 1-A. Carthage Point gas-distillate field in Adams County, Mississippi, is the closest producing area.

Caddo Parish: Union Producing Company's Noel Estate 1-A, 11-19n-16w, is below 6554 feet in blue shale and hard sand, but has had no shows since reporting a recovery of 120 feet of oil from the Pettit at 5701-16 feet.

J. R. Querbes et al's A. J. Mitchell Estate 1, C NW NW 8-18n-16w, cemented 5½-inch casing at total depth of 6300 feet and is waiting on cement. Cores taken encountered shows of oil and gas. Base of Massive was picked up at 4740 feet; Pettit from 5635-80 feet.

Big West Drilling Company's C. L. Ellerbee 1, 27-15n-12w, is drilling below 7835 feet.

☆ Arkansas

Union County Wildcat Has Water on Drill-Stem Tests

Union County wildcat shows salt water on 2 drill-stem tests; 2 wildcat starts brighten decreasing activity.

Union County: The Atlantic Refining Company's wildcat Goode 1, NW 6-17s-13w, Champagnolle area, is drilling below 4820 feet in the Cotton Valley. Two tests of 4200-09 and 4630-49 feet levels in the section recovered only salt water.

Kerlyn Oil Company's Crossett Lumber Company 1, C SW SW NW 9-19s-10w, an old wildcat abandoned at 5415 feet, is still shut down by high water and is still waiting to rig up rotary tools. The test is expected to be carried to the Smackover.

Lafayette County: Mid-Continent Petroleum Corporation's O. S. Moore 1, C SE NW 33-17s-24w, Smackover lime test in the Patton-McKamie area, is below 7058 feet in the Cotton Valley. Travis Peak was topped at 5710 feet, approximately 42 feet higher on structure than Barnsdall Oil Company-Sohio Petroleum Company's Moore Heirs 1, C NW SE 32-17s-24w, completed in September as the first oil well in the area. Supposition is that the well may be a gas-distillate producer.

Ouachita County: Skelly Oil Company has spudded Adams 1, C NW

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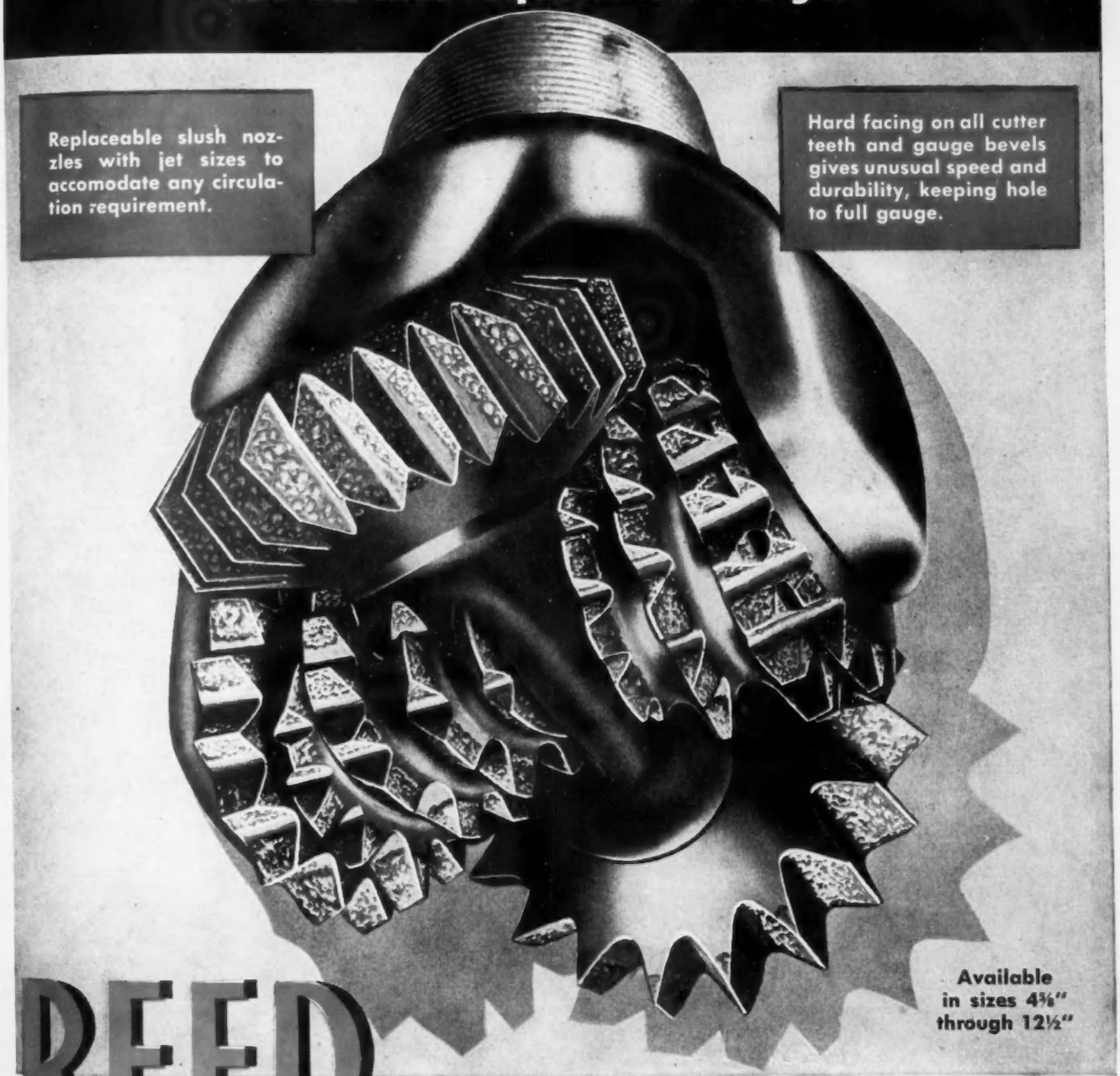
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NW NW 29-13s-18w, 8 miles west of Camden, which will test the Smackover. Two tests have been abandoned near the prospect. They are Tide Water Associated Oil Company's Graves 1, 1½ miles northwest and a Smackover failure; and Skelly Oil Company's Russell 1, NE SE 29-13s-18w, ¾-mile northwest, which logged showings of oil from 1789-99 and 1801-09 feet.

Miller County: Another wildcat getting under way is Deep Rock Oil Corporation's Mrs. W. D. McClouth 1, C SE SE SE 26-15s-19w, 2 miles northeast of the Texarkana discovery well.

Logan County: M. J. Reinhart's B. Nagle 1 wildcat, C NE NE 11-8n-24w, is drilling below 2550 feet.

Lonoke County: G. D. Howell, Trustee's G. Barnwell 1, 18-3n-9w, was still fishing at 1345 feet.

☆ Mississippi

Additional Completions Are Given Cranfield Area

Two more completions given Cranfield area; Hinds County test fails to make production; new Fayette field in Jefferson County being exploited.

Adams County: The California Company added 2 more successful completions in the Cranfield field. A. M. Ratcliffe 8, 71-7n-1w, was completed with an initial production rate of 306 barrels per day through 5/32-inch tubing choke. Gravity of the oil was 38.8 and gas-oil ratio 1180/1. Production is from 198 perforations at 10,298-331 feet in Basal sand zone. California's Ella G. Lees 11, 29-7n-1w, was also completed in Basal sands at 10,248-285 feet. Initial production was 390 barrels per day. California's Ella G. Lees 10, 29-7n-1w, has reached the productive zone and is setting casing to 10,325 feet. Roeser & Pendleton-Sohio Petroleum Company's Baker-Maier 1, 34-6n-2w, wildcat, continues to test the lower horizons without additional shows. The well is now drilling in the Tuscaloosa zone, topped at 9830 feet. Phillips Petroleum Company's Davey 1, 46-8n-2w, wildcat, is drilling below 7682 feet with no shows reported.

Hinds County: The Carter Oil Company's Simmons C-134, NWc SE NW 29-4n-3w, wildcat, is drilling at approximately 9000 feet with no shows indicated. Cores from 8658-77 feet recovered a lean strata of porous sand with quantities of salt water. Tuscaloosa was picked up at 8130 feet and Eutaw zone at 7490 feet. In the Jackson gas field Leonard Jones M. Lerew 1, NW NE 15-5n-1e, which had earlier reported encouraging shows of oil in stringers above the Selma chalk at 2493 feet, was abandoned at 3464 feet. The Selma zone, which has a formation of gas rock in this area, was extensively reworked after the well swabbed 14-gravity oil with salt water content running very heavy, but efforts to attain commercial production were unsuccessful.

Clarke County: H. L. Hunt's long Bell Petroleum Company 1, NW NW SW 29-1n-18e, Langsdale field, is preparing to complete after perforating 3 sections of the productive Eutaw horizon at 3658-76, 3713-26 and 3744-54 feet. Tubing and rods have been run and pump is being installed.

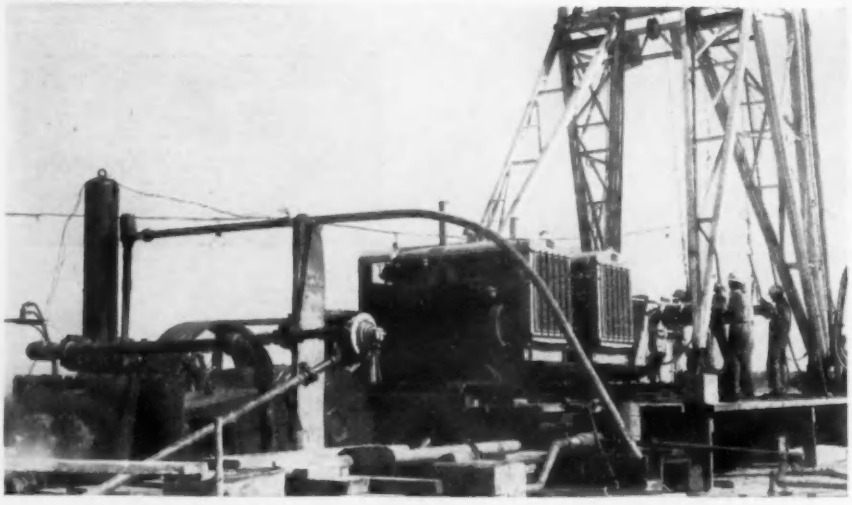
Itawamba County: Greggtex Gasoline Corporation's R. L. Burdine, NW NE SE 16-11s-9e, wildcat, has been abandoned at 1511 feet. Shows of gas were reported at 1060-82 feet and oil shows at 1195-98 feet, but not in quantities to indicate commercial production.

Lawrence County: Humble Oil & Refining Company's V. L. Parkman 1, SWc 8-6n-20w, is drilling below 5665 feet after extensive whipstocking operations. Well was originally drilled to 7588 feet without testing any shows and then plugged back to 3388 feet, from which point new hole was drilled.

Warren County: William Helis' Anderson's-Tully Lumber Company 1, wildcat, NEc 40-14n-3e, was running casing after reaching 1830 feet. Interest in the northern part of this county as well as in the other lower Delta counties of Issaquena, Sharkey and Humphreys, probably will increase due to the strike in the Delhi field across the river from Vicksburg.

Wayne County: Humble Oil & Refining Company's G.M.&O. Ry B-3, NW NE 3-9n-9w, Eucutta field, has been completed with an initial production of 65 barrels of oil per day. Casing was perforated at 5252-66 feet in the Eutaw zone and the well swabbed in. Magnolia Petroleum Company's McGill Heirs 1, SEc NE 13-9n-9w, is installing pump after testing the Eutaw horizon at 5236-44 feet. Gulf Refining Company's A. E. Clark NEc SW SE 12-9n-9w, is preparing to complete after swabbing commercial quantities of oil in a test of the Eutaw.

Jefferson County: Humble's M. R. Smith B-1, 16-9n-1e, offset of the discovery well in the new Fayette field, is drilling below 8355 feet in chalk and shale with no shows. Wilcox was topped



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at 3672 feet and cores indicated sand and shale with nothing encouraging. Fayette is being rapidly developed by Humble with 3 other tests working. Its S. Hirsch Company 1, 15-9n-1e, is running electrical log after reaching 8611 feet. The Wilcox was cored extensively and slight shows of oil were noted at 3700-14 feet, but nothing has been reported below that point. Humble's J. Fred Gordon 1, 25-9n-1w, is building roads and permit has been given to drill the Mrs. A. M. Stewart 1, SEc 32-9n-1e.

☆Alabama

Gilbertown Field Eastern Extension Test Is Failure

The Carter Oil Company's 2 Sam Alman unit 1, SW SW NE 5-10n-3w, in the eastern extension of the Gilbertown field, Choctaw County, is the first failure in the field in some time. A drill-stem test at 2609-2880 feet made salt water, and when tubing was perforated at 2765 feet, a swab job was unsuccessful. Carter's Sam Alman Unit 1, SW SE NE 5-10n-3w, Gilbertown area, is installing pump after a successful drill-stem test of the Eutaw horizon at 3306-70 feet.

Wilcox County: Seaboard Oil Company of Delaware's S. M. McConnico 1, 32-12n-10e, wildcat, is drilling at 3130 feet in shale with no shows.

Mobile County: True Cauble's Boykin 1, C NE SE 25-2n-1e, wildcat, is drilling below 7500 feet in hard shale with no shows indicated. Danciger Oil & Refining Company's W. R. Geisler 1, NE SW 8-4s-2w, wildcat, is running surface casing to total depth of 1950 feet.

Clarke County: Danciger's State of Alabama 1, C SE NW 2-5n-2e, wildcat, is drilling below 4360 feet with no shows.

Florida

Humble Oil & Refining Company's Gulf Coast Realty 6, SW NE 19-48s-30e, Collier County, which was spudded early in November, is drilling below 1000 feet.

Highlands County: Humble's G. C. Carlton Estate 1, C SW NE 34-38s-29e, wildcat, is drilling below 12,246 feet with no shows reported.

Charlotte County: Humble's Lownes-Treadwell 1-A, SW NE 17-42s-23e, wildcat, was coring at 12,242 feet in lime and anhydrite.

Georgia

Crisp County: Kerlyn Oil Company is rigging up rotary tools at Cecil Pate 1, C SE¼ Lot 144, 13th Land District, single Georgia 5000-foot wildcat test. Drilling is expected to get underway within the week.

Seven Georgia Wells Are Planned by Houston Firm

A seven-well wildcat drilling program for Georgia has been announced by James E. Weatherford and associates of Houston. All will be drilled on gravity meter prospects.

Weatherford and Kerlyn Oil Company are rigging up on Cecil Pate 1, 5000-foot Basement wildcat in Crisp County. The test is in Land Lot 144, Georgia Land District 13. Bullington and Holloway, of Tyler, Texas, are the contractors.

Martin Harris Drilling Company of Baton Rouge is moving in a rig to drill Weatherford's Henry Wilkes 1, 3500-foot Basement wildcat 1¼ miles northwest of Higgston, Montgomery County.

Weatherford has a block south of the Crisp County well known as the Doles prospect in the northeast part of Worth County. The rig will be moved in from Weatherford & Kerlyn's Pate 1 for this test.

The operator has four other farmouts from General American Oil Company which will be drilled in 1946. They are the Altahama prospect, north of Baxley, Appling County; Uvalda area in Montgomery and Toombs Counties; Lumber City sector in the southern part of Wheeler County, and the Tyson prospect in southern Tattnall County.

☆Illinois Basin

Mattoon Pool in Illinois Is Given South Extension

Mattoon pool, Illinois, has a 2-mile south extension completed, a northeastern extension near completion, and a semi-wildcat in the early completion stages; offset to Indiana discovery has new pay horizon; Henderson County, Kentucky, has discovery.

Illinois

B. A. Baker's Bates 1, SW NE NE 12-12n-7e, a mile east and 2 miles north of production, is waiting on tanks to

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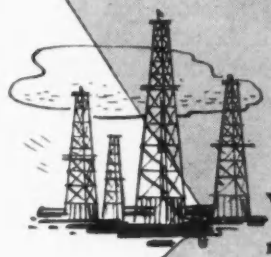

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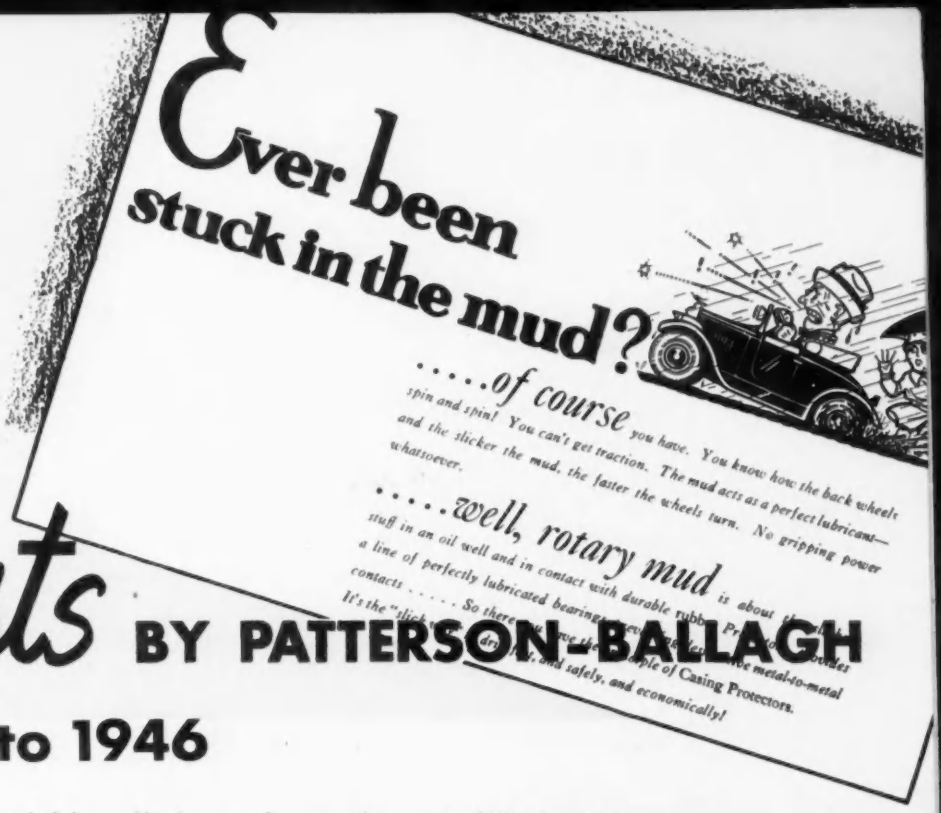
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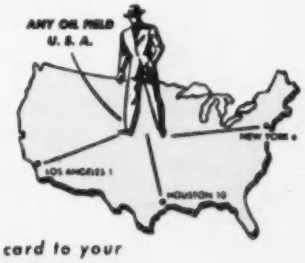

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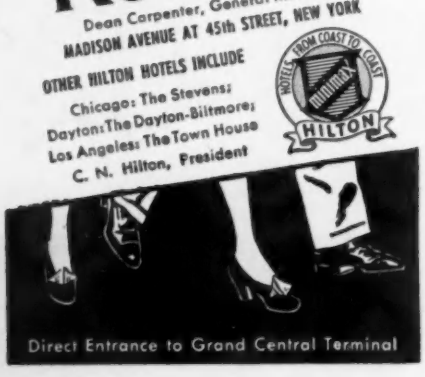

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swab into production. The well cleaned out for 3 days with 1400 to 1600 feet of oil constantly in the hole. Production is in the Aux Vases sand.

Frank Hinkle's Myers 1, a semi-wildcat on the west edge of the City of Mattoon, is flowing from Aux Vases sand after drilling plug. Cypress sand is yet to be tested through casing perforations. Victor Sheff's Bresee 1, NE NE SE 15-11n-7e, a 2-mile southern extension of the field, has been completed in Aux Vases sand for 100 barrels of oil daily on pump. In the Mattoon pool proper, E. P. Jarvis' Jones 1 is flowing 18 barrels per hour from Cypress sand with gas volume estimated at 500,000 cubic feet per day. With belief that the well bridged, operators are still testing. The pool still was far ahead of the other areas in the basin with 56 operations, including 25 wells drilling or rigging tools, and the remainder testing.

Kingwood Oil Company's Fulk 2, NW SW SW 13-5n-70, an outpost in the Bible Grove pool, has set casing for test of McCloskey lime at 2832-42 and 2867-71 feet. During a drill-stem test, the well flowed oil in 13 minutes.

Indiana

Ryan Oil Company's Kerns 1, SE SW SW 23-1s-12w, Gibson County, a north offset to the same operator's Putnam 1, a discovery, is giving the area a new pay horizon. During early tests the well swabbed 8 barrels of oil per hour from Cypress sand at 1965-80 feet. Original production in the pool is from Hardinsburg sand.

Kentucky

Basin Drilling Company's Kasey Klub 1, 8-P-23, at the southwest edge of the city of Henderson, Henderson County, is a discovery in the McCloskey lime. Operator has set casing to test McCloskey lime at 2440-50 feet. The Carter Oil Company made its initial posting of a crude price in the Mattoon, Illinois, pool effective November 21. The price was $1.37 per barrels, based upon the use of 100 percent tank tables in computing the volume of oil purchased.

☆ Michigan

Ashton Test Has 1000 Feet Of Oil in Monroe Dolomite

The Pure Oil Company's Carr 1, NW NE SW 5-18n-10w, Osceola County, southwest offset to the Ashton (Traverse lime) discovery, 4 miles north of the Reed City field, showed 1000 feet of oil in the Monroe dolomite at 3675 feet and will be acidized. Monroe top was checked at 3619 feet.

Monroe dolomite is the principal producing horizon in the older Reed City field and if Pure's test in the Ashton area, opened by a 2900-foot Traverse lime well, is commercially productive it will greatly increase the area's importance.

Montcalm County: Sohio Petroleum Company's Gyger 1, SE SW NW 1-11n-7w, west offset to the Douglas discovery, logged Dundee at 3405 feet and on a drill-stem test at 3406-17 feet showed 140 feet oil, and 60 feet salt water. Casing was set at 3460 feet for completion by perforation.

☆ Rocky Mountain Area

California, Texas Firms Register Rangely Strikes

California and Texas companies each strike in Rangely field, Colorado; Texas joins play in Cat Creek field, Montana; Continental has deep test in Circle Ridge area, Wyoming; Weston County, Wyoming has new field.

Colorado

The Texas Company and the California Company each brought in a producing well in Rio Blanco County, Colorado. California's Gray 10 flowed 500 barrels of oil per day, and Texas' U. P. 4-29 flowed 158 barrels the first 12 hours.

El Paso County: Another prairie wildcat was spudded to add to the sizeable group now drilling up and down the front range of the Rockies in Colorado. The newcomer is Colorado Petroleum et al, NW SE 17-17n-67w, 4 miles northwest of the location recently announced by Continental Oil Company for a test on Sullivan Park Dome.

Wyoming

Continental Oil Company is drilling a deep test in the Circle Ridge area to test the horizon below the Tensleep. The well is Shoshone 767, Well 4, in the center of lot 6, in 6-6n-2w, Fremont County.

Platte County: Another Continental wildcat is rigging up rotary for a test of all sands to the Morrison south of

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Orin Junction on the Reno lease, SW SE SW 1-30n-70w.

Weston County: A new oil field of moderate promise was brought in by Morton & Seigel's State 1, NW SW NE 16-44n-63w, 7 miles southwest of Newcastle. After drilling to 3600 feet the well was plugged back to the Newcastle sand, topped at 3331 feet. The well tested 50 barrels of oil per day. The Morton Drilling Company, one of the partners, is moving headquarters to Casper, Wyoming from Illinois, and will engage in contract drilling and operations on its own account in various parts of the Rocky Mountain region.

The week's successful completions included 2 in the Salt Creek field by Stanolind Oil and Gas Company, 1 at Steamboat Butte by British-American Oil Producing Company, 1 at Half Moon by Husky Refining Company, and one in the Frannie field by Continental Oil.

Wildcat failures were General Petroleum's 1-29P in Park County, Gooseberry area, and the British-American U. P. 1, NE 26-21n-78w, in Carbon County.

Montana

The Texas Company has joined the play in Cat Creek field, Petroleum County, recently activated by the Schrock-Fifer discovery in the Ellis sand. This is the first time Texas has been in this part of Montana. The company took a 640-acre state lease on the axis of the Cat Creek anticline, all 36-15n-30e. The acreage is several miles southeast of the Schrock wells.

Continental Honored

Continental Oil Company has been awarded five national safety awards. A total of 145 companies competed in the National Safety Council contest from July 1, 1944, to June 30, 1945. Continental won first place in four divisions: production, marketing, pipe line and drilling operations, and second place in the manufacturing division.

Geological Survey

The State Geological Survey of Illinois has issued "Report of Investigations 105." In this report are papers on "Subsurface Relations of the Maquoketa and 'Trenton' Formations in Illinois," by E. P. DuBois, and "Petroleum Possibilities of Maquoketa and 'Trenton' in Illinois," by Carl A. Bays.

☆ California

Wildcat Activity Is Brisk; Shell Test Cores Oil Sand

Unusually large number of wildcats under way, with deep tests scheduled in both Kern River and South Belridge fields; Shell's Old River wildcat cores streaks of oil sand; good producers continue to be brought in from fractured Schist in Edison field; Bandini wildcat sets pipe; old tideland well at Seal Beach to be redrilled; oil shows noted in General Petroleum's Lompoc wildcat; Glenn County has new gas test.

During one week 11 new wildcats got under way, an unusually large number. They are scattered from Los Angeles County in the south to Glenn County, almost 200 miles above San Francisco. Total well completions for 1945, exploratory and development wells combined, probably will run about 125 behind last year's total in view of the fewer number of wells drilled in proved areas since the close of the war.

Kern County: Deep tests in 2 of the San Joaquin Valley's older fields will get under way shortly. Tide Water Associated Oil Company will drill Luck 54, a deep test to basement in 30-28s-28e, Kern River field. Belridge Oil Company has staked Well 62-W-33 in 33-28s-21e as a deep test of the South Belridge field. Another wildcat announced for the Belridge area is Wilshire Oil Company's Lehman 1, which will be drilled in 18-28s-20e, west of the main field.

Shell Oil Company's wildcat, K.C.L. 45-16 in the Old River area, about 4 miles southeast of the Ten Section field, cored streaks of oil sand at the top of the Stevens zone, encountered at 10,562 feet. Only a small volume of mud and water were recovered on a test of the interval 10,562-10,626 feet, and drilling has been resumed.

Some splendid wells continue to be brought in from fractured Schist in the Edison field. Jergins Oil Company brought in 2 in a week, 1 being good for 1025 barrels, the other 1240 barrels. H. H. Magee, Operator, completed a 2000-barrel well and General Petroleum Corporation and North American Oil Consolidated each completed 300-barrel producers. The larger wells have been beaned back but still are producing 400 to 500 barrels. A dozen other wells are drilling toward pay.

Greater drilling activity is indicated in

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CABLE & STINE
WICHITA FALLS, TEXAS

the Grapevine-Tejon area with the announcement by Reserve Oil & Gas Company that it soon will start 3 wells. Small wells are the rule in the field. A Richfield Oil Corporation completion last week was good for 109 barrels of 18-gravity oil, 44 percent cut.

Hancock Oil Company has completed K.C.L. 1 in the long-dormant Union Avenue area near Bakersfield. The well produced 100 barrels of 15-gravity oil through an open line but soon died. Total depth is 5346 feet.

Los Angeles County: Interest is centered in Richfield's Bandini wildcat, Union Pacific Unit 1, 9-2s-12w. Operator is reaming hole preparatory to running casing to 8550 feet. Streaks of oil sand are reported to have been logged for 40 feet below this point. Total depth is 8608 feet. Three other wildcats are being drilled in this area, 1 by C. G. Willis, who has 7-inch casing standing cemented in Pansini 1 at 8195 feet, another by C.C.M.O. Company, whose Bandini 1 is drilling below 6000 feet, and a third by Richfield which thus has 2 wildcats drilling in the same general area.

The Ohio Oil Company's wildcat, Gardena Community 1 in 24-3s-14w, which is reported to have flowed 200 to 300 barrels on 2 occasions, is still not a producer. Operator continues to perforate and swab. Successful completion of the well would establish presence of a new field at this point.

In the Seal Beach field Atlantic Oil Company and O. M. Slosson have leased 70 acres of the Fred Bixby property and plan to drill several wells, the first of which will be an offset to Shell's Bryant 2-1.

The Gilco well at Seal Beach which was directionally drilled out under the ocean and abandoned about a year ago when drill pipe stuck in the hole, has been taken over by Marine Exploration Company and the well is being cleaned out preparatory to resumption of drilling. Original hole was drilled 7025 feet and was 60 degrees off vertical at that point.

Crews continues to fish for drill pipe in Shell's Alamitos 48-A, deep test in the Long Beach field. Total depth is 14,875 feet.

Santa Barbara County: General Petroleum has made a formation test at 3938-4122 feet in its Lompoc wildcat, Los Alamos 3, 31-8n-33w. A fair to good gas blow and recovery of gassy mud with 5 percent oil were reported.

Humboldt County: El Rika Oil Company is rigging up to test above 3000 feet Standard Oil Company's abandoned Stevens-Eureka 1 in 33-4n-18w near Eureka. Standard abandoned the well at a depth of 8220 feet.

Sacramento County: Amerada Petroleum Corporation, which completed Weinzheimer 1, 34-5n-5e, in the Thornton gas field for 5,260,000 cubic feet, has spudded in Crump 1 in Sect. 28. In the Rio Vista gas field Standard Oil Company of California is completing Terchuren M-5 in 34-4n-3e. Well flowed 10,940,000 cubic feet through a ¼-inch choke on test of a 20-foot interval from 4584 feet to 4604 feet.

Glenn County: General Petroleum is grading roads for Norman 1, wildcat gas test 12 miles southeast of Willows in 5-18n-1w in what is known as the Packer Island area.

☆ Canada

Anglo Canadian Takes Up Wabamun Lake Area Block

Anglo Canadian Oil Company has taken up a 151,910-acre block of Crown oil and gas rights in the Wabamun Lake area, 30 miles west of Edmonton. The block, in Twps. 50 and 52, Rges. 3 to 6w5, marks initial oil work in a huge section of the Central Western Alberta Plains, along the east side of the Foothills Front.

Unity, in central western Saskatchewan, became the first community in that province of some 800,000 population to be wholly served with natural gas produced in the province. The town is 5 miles north of the Vera-Unity gas field, Saskatchewan's first important gas source, discovered in 1944 by Bata Petroleums Ltd.

The gas field now has 9 wells, ranging in potential from a few hundred thousand cubic feet to as much as 40 million daily. The Viking sand, at depths from 1600 to 1700 feet, has been proven over an area of about 5000 acres. The Unity sand (Basal Lower Cretaceous) has been proven over an area of about 2000 acres, at depths ranging from 2050 to 2100 feet.

Shell of Canada 10-14-J, 1sd 10 14-25-5w5, West Flank test on the Jumping Pound Anticlines which showed water in the top of the Madison lime, is not yet abandoned, as was reported. Bottomed at 10,897 feet, 258 feet in the lime, the well has 7-inch casing set at 10,663 feet. The well is standing, pending decision by the backer.

455 War Veterans Return To Sun Oil Company Jobs

Four hundred and fifty-five veterans, all former employes of Sun Oil Company, have been reemployed in their old or better jobs, the company reported.

The report discloses 3620 Sun Oil employes left to enter military service, and that 76 have been reported dead. In addition, 141 Sun Oil tanker seamen died from war causes.

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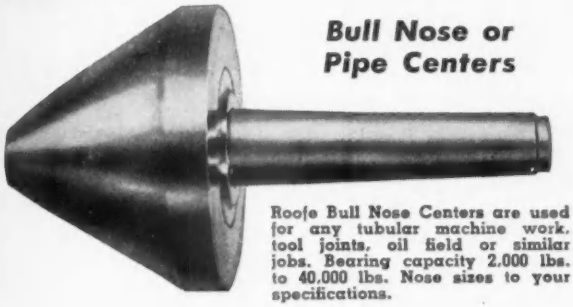

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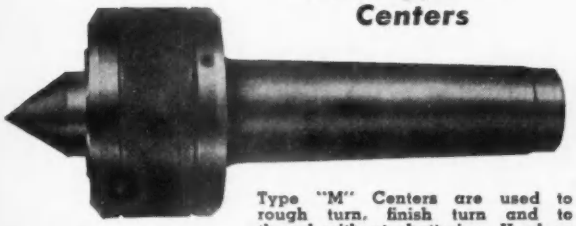

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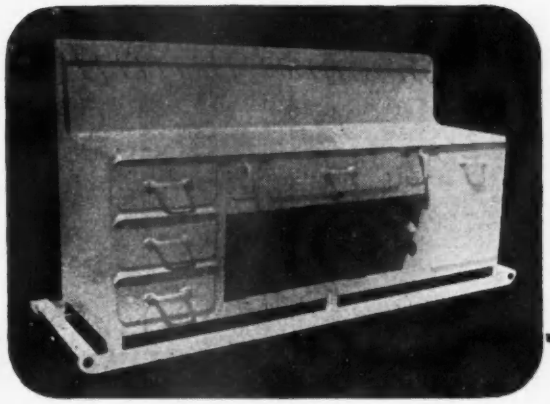

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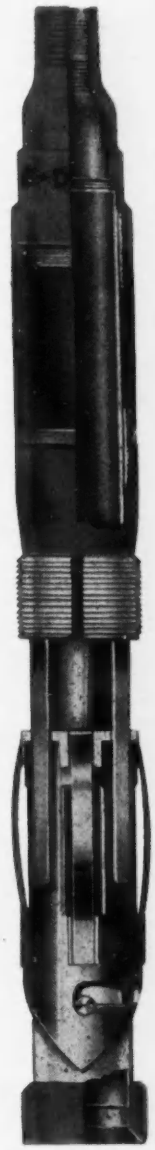

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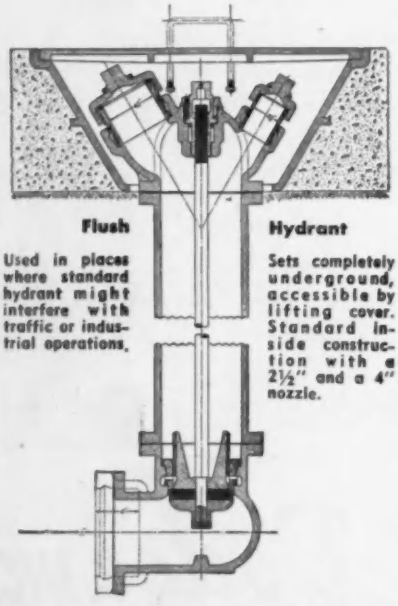

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CALIFORNIA WILDCATS

Los Angeles County—Failure: Superior Oil Co.-British American's Handy 1, 18-4n-17w, Del Valle area, abnd 10,095 ft.

Kern County—Failures: Del Valle Gasoline Co.'s Burnand 1, 5-30s-24e, Buttonwillow area, Scalez 4510 ft, abnd 4705 ft.

Standard of Calif.'s Fitzgerald 55, 24-29s-21e, Cymric area, Miocene 5472 ft, no basal Etchegoin, abnd 5647 ft.

Tide Water's Carver 41, 19-25s-28e, Jasmine area, abnd 1803 ft.

Kings County—Failure: Shell's Salyer 3-1, 30-22s-22e, Liberty Farms area, abnd 3700 ft.

COLORADO WILDCATS

Rio Blanco County—Oil Discoveries: California Co.'s Gray 10, se ne 24-2n-103w, flow 500 bbls, ⅝-in, td 6462 ft.

Texas Co.'s U.P. 4-29, ne sw 29-2n-102w, flow 320 bbls, td 6382 ft.

ILLINOIS WILDCATS

Clinton County—Failure: J. C. Powell et al's Allen 1, sw sw nw 5-2n-2w, abnd 1311 ft.

Cole County—Oil Discovery: M. H. Richardson et al's Powell 1, se ne se 10-12n-7e, Cyp 1770-94 ft, pump 228 bbls, td 2007 ft.

Cole County—Failure: E. Julian Davis' McIntyre 1, sw sw nw 20-12n-8e, abnd 2188 ft.

Jefferson County — Failure: Algonia Oil's Beckmeyer 1, ne nw se 6-1s-1e, abnd 1838 ft.

Logan County—Failure: Lee Werner's Britton 1, swc 22-18n-3w, abnd 494 ft.

Richland County — Failure: C. R. Craft's Boley 1, nw ne sw 7-2n-14w, abnd 3291 ft.

Washington County — Failure: Glenwood's Morticcio 1, ne sw nw 12-2s-1w, abnd 2207 ft.

Wayne County—Oil Discovery: Bell Bros. et al's Leach 1, c ne nw se 9-2s-9e, O'Hara 3302-11, Rosi 3329-42, pump 122 bbls, td 3407 ft.

Wayne County—Failures: Fisher Oil's Corbett et al 1, ne se nw 25-2s-9e, abnd 3345 ft.

Lucas Dev. Co.'s Lucas 2, sw sw ne 7-1n-6e, abnd 3137 ft.

KANSAS WILDCATS

Barber County—Gas Discovery: Drillers Gas Co.'s Pearl Lake 1, c w½ sw sw 1-31s-14w, Viola 4400-09 ft, flow 5 mln gas, td 4409 ft.

Barton County—Failure: W. L. Hartman's Pithner 1, nw cor 13-16s-11w, Arb 3399 ft, abnd 3429 ft.

Douglas County—Failure: Volcanic Oil Co.'s Jackman 1, ne se 34-12s-19e, Arb 2080 ft, abnd 2210 ft.

Graham County — Failure: Cities Service's McKim 1, ne ne sw 20-6s-23w, Arb 4005 ft, abnd 4040 ft.

Greenwood County — Failure: Ralph Brineager's Hamsen 1, ne se se 28-26s-13e, Miss 1494 ft, abnd 1581 ft.

NORTH LOUISIANA WILDCATS

East Carroll Parish — Failure: McAlester Fuel Co.'s Mrs. Brown 1, c sw se 44-18n-13e, elev 91 ft, gas rock 3380-3458 ft, Tuscaloosa 3562 ft, abnd 4208 ft.

Franklin Parish — Failure: C. L. Smith's McGehee 1, c sw sw 16-11n-9e, elev 70 ft, Wilcox 2925 ft, chalk 6325 ft, abnd 8491 ft.

Natchitoches Parish—Failure: J. H. Liles' Hortzog 1, 110-7n-6w, temp abnd in Wilcox 3500 ft.

NORTH LOUISIANA NEW PAY TEST

Claiborne Parish—Athens Pettit Discovery: Skelly's Dance 1, (OWWO) ne sw 31-20n-6w, perf 48 shots 6034-46 ft, 5000 gals acid, flow 146 bbls 32-gr, 5/32-in, cp 1025 lbs, tp 530 lbs, gor 300/1, abnd otd 6708 ft, pb 6510 ft.

MICHIGAN WILDCATS

Arenac County—Failure: Michigan Oil Co.'s Szostak 1, ne sw sw 28-19n-4e, abnd 2880 ft.

Mecosta County—Failures: Gordon Oil Co.'s Rauch 1, e½ ne ne 1-16n-10w, abnd 3726 ft.

C. W. Collin's Hoyt 1, sw ne ne 1-13n-8w, abnd 3855 ft.

Osceola County — Orient Gas Discovery: Sohio's Gas Unit 1, se nw se 13-17n-17w, Stray sand, flow 1,310,000 ft gas, td 1517 ft.

Van Buren County—Failure: S. L. Godfrey's Steinman 1, nw nw nw 6-2s-15w, abnd 1152 ft.

MISSISSIPPI WILDCATS

Itawamba County—Failure: Greggtex Gasoline Corp.'s R. L. Burdine 1, nw ne se 16-11s-9e, abnd 1511 ft.

Jasper County—Failure: A. S. Myers' D. C. King 1, sw se 30-1n-12e, Wilcox 1374 ft, jnkd & abnd 6275 ft.

Madison County—Failure: Sohio's Mrs. O. K. Andrews 1, sec ne sw 11-9n-1w, Wilcox 1866 ft, Eutaw 5862 ft, Tuscaloosa 6585 ft, Comanchean 7542 ft, abnd 7558 ft.

Yazoo County—Failure: Carter's Susie Ingram 1, sec 2-12n-2w, Wilcox 1813 ft, Eutaw 5812 ft, abnd 6358 ft.

NEW MEXICO NEW PAY TEST

Lea County—Drinkard Gas Discovery: Phillips' Sims 1, c nw sw 24-22s-37e, elev 3333 ft, salt 1460-2380 ft, Yates 2520 ft, San Andres 3890 ft, Glorietta 5030 ft, Clear Fork 5430 ft, Tubb 5990 ft, Pre-Cambrian 7315 ft, 3,844,000 ft sweet gas open 2-in, 1250 gals acid via Clear Fork perf 5459-84 ft, td granite 7377 ft, pb 5485 ft.

OKLAHOMA WILDCATS

Cotton County — Failure: D. H. Bolin's Zeigler 1, sw sw sw 23-4s-13w, abnd 2425 ft.

Garvin County—Failure: Pennington et al's Muer 1, nw sw ne 24-4n-3e, abnd 2462 ft.

Noble County—Failures: J. E. Trigg's Patch 1, sw se se 5-21n-2w, Miss 5134 ft, abnd 5199 ft.

Ace Gutowsky's Bowlby 1, ne nw 22-21n-1e, Miss 4728 ft, abnd 5155 ft.

Seminole County—Failure: Villines & Villines' Atkinson 1, ne ne nw 30-6n-7e, Crom 3046 ft, abnd 3068 ft.

Seminole County—Gas Discovery: Gillispie & Sons et al's Patton 1, se nw se 18-6n-8e, Gilcrease sd 2740-55 ft, flow 6 mln gas, 900 lbs rp, td 2985 ft.

WEST TEXAS WILDCATS

Crane County—Failure: Gulf's Muir 1-E, c sw sw PSL 23, blk B-27, elev 2468 ft, Yates 1390 ft, San Andres 2500 ft, Glorietta 3370 ft, Tubb 4220 ft, base Permian 5655 ft, Simpson 5655 ft, Waddell 5691 ft, abnd 6137 ft.

Ector County—Failure: Humble's Cummins 1, c sw sw T&P Ry. 11, blk 45, T-1-N, elev 3240 ft, anhy 1390 ft, Yates 2580 ft, San Andres 3990 ft, Glorietta 5160 ft, Clear Fork 5540 ft, base Permian 7800 ft, Devonian 7820 ft, Silurian 8070 ft, Montoya 8165 ft, Simpson 8385 ft, Ellenburger 9165 ft, abnd 9235 ft.

Gaines County — Jones Ranch Discovery: Amerada's Jones 1-A, c nw ne PSL 3, blk A-6, elev 3699 ft, anhy 2090 ft, San Andres 4630 ft, Clear Fork 6660 ft, Tubb 7250 ft, Wolf Camp 9085 ft, Pennsylvanian 10,215 ft, Woodford shale 11,129 ft, Devonian 11,181 ft, flow 1014 bbls 43.5-gr sweet oil, 362 bbls sw, gor 284/1 via 1¼-in, tp 25-75 lbs, cp (sealed), 15,000 gals acid Devonian perf 11,181-284, 11,380-11,422 ft, td 11,635 ft, pb 11,422 ft.

Garza County—Failure: Union of Cal.'s Post 1-C, 808 snl 5940 ewl sect 29, blk 4, K. Aycock sur, elev 2530 ft, anhy 805 ft, Yates 1180 ft, 1st lime 2190 ft, Clear Fork 3408 ft, abnd 3446 ft.

Lynn County — Failure: Barnsdall-Sohio's Williams 1, c nw sw E.L.&R.R. Co. 2, blk 8, elev 3054 ft, anhy 1930 ft, Yates 2520 ft, San Andres 3720 ft, Glorietta 5120 ft, Sprayberry sand 6540 ft, abnd 7509 ft.

Pecos County—Failure: Mack Hays et al's White-Baker (Ohio) 1, se se se T.C. Ry. 27, blk Z, elev 2650 ft, anhy 732 ft, salt 760 ft, abnd 1901 ft.

WEST CENTRAL TEXAS WILDCATS

Parker County — Failure: Humble's Tompkins 1, 660 snl 1980 wel T&P Ry. 169, 3 mi se Peaster, elev 1118 ft, Barnett shale 5690 to 5940 ft, Mississippi 5940-65 ft, Ellenburger 5965 ft, abnd 7980 ft.

Stonewall County—Failures: T. P. Coal & Oil Co.'s Sandell 1, c se se H&TC Ry. 429, blk D, elev 1909 ft, Clear Fork 1170 ft, chert 6594 ft, abnd 6836 ft.

A. R. Dillard et al's Sparks 1, nw nw sw H&TC Ry. 161, blk 1, elev 1937 ft, abnd 6120 ft.

SOUTH CENTRAL TEXAS WILDCATS

Bastrop County—Failure: Continental's Willie Malina 1, 330 fr s&el 100-ac tr, Andrew Graham sur.

Bexar County—Failure: Geo. Parker-C. L. McCune's T. J. Goad 11, 2200 fr m/wly/sl 330 fr wl 1125-ac lse, J. M. Urriegas Gr, abnd 4400 ft.

SOUTHWEST TEXAS WILDCAT

Starr County — Failure: W. L. Goldston's Roos & Bennett 1, 330 n of nl of sh 101 350 fr el sh 100 on 2100-ac lse, Porc 93, sh 100, perf 3252-55, 3270-76, test gas, abnd 4700 ft.

LOWER TEXAS COAST WILDCATS

Brooks County—Failure: La Gloria Corp.'s Mary Powers Est. 1, 467 fr w&sl 640-ac lse and GC&SF sur 313, abnd 6018 ft.

Calhoun County — Failure: Humble's Mrs. Maude B. Traylor 1, 3450 fr sel 1650 fr swl 2000-ac lse, Juan Maldonado Gr, abnd 10,183 ft.

San Patricio County — Failure: Southern Minerals Corp.'s A. J. Wheeler 1, 467 fr nl T. T. Williamson sur 33 467 fr wl 652-ac lse, abnd 7466 ft.

Victoria County—Failure: Sterling O & R Corp.'s J. J. Welder 1, 1066 fr wl 660 fr nl 380-ac lse, Day Land & Cattle Co. sur, abnd 6530 ft.

UPPER TEXAS COAST WILDCATS

Brazoria County—Oil Discovery: Es Cockrell's Seaburn Est, Heirs 3, 1200 fr nl 1200 fr nly/wl 2757.22-ac lse, Jared E. Groce 5-Lge Gr, elev 13 ft, dome 3186 ft, pb & st 2010 ft, perf 60 shots 3956-66 ft, flow 231.84 bbls

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FOR SALE

■ Portable Mud Hog: Union Tool duplex pump 6¼" x 12" stroke powered by Cadillac engine, built for heavy duty on skids, complete and ready to go, $975.00. J. P. Mohar, 350 E. Pleasant St., Long Beach, California.

■ FOR SALE: L Type Star Spudder 110 HP Climax motor, complete with 6" to 10" tools. Priced to sell. W. D. Wilson, 800 Ohio St., Lawrence, Kansas, phone 1371 R.

■ 2 Emsco Rotaries, open gear drive, excellent condition. $1,500.00 each. Address: Box 64, The Oil Weekly, Houston, Texas.

■ FOR SALE: One heavy duty pipe pulling machine with spudder attached mounted on a 3½-ton White truck. This unit is a two-drum unit. It can handle 10,000 feet of pipe of any size. Also a 45-foot heavy duty wood rig. Price $5000 F.O.B. Wooster. Write to David Shafer, Wooster, Ohio.

■ FOR SALE: Complete Power Drilling Rig. Now running. Excellent condition with practically new Hopper Hoist powered two WAKU Waukesha engines; 7" x 14" Gumbo Buster power pump with Buda engine. For appointment call O'Melveny, Woodsboro, Texas, Phone 93 or Corpus Christi 6422.

2—Used Chrysler model 108-503 industrial power units complete with Sticer transmission.

1—International model PA-50 oilfield type power unit with 5 Speed Brookville locomotive transmission.

1—Model T-40 wide gauge tractor completely overhauled. Equipped with 24 inch tracks and C-4 Braden winch with transmission and "A" frame.

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160 h.p. gasoline power units, complete for sawmill or rice field service, each $2285.

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1—81 HP Lufkin twin crank, Lufkin unit complete skid type with Continental motor, 10' stroke latest type.
2—20 HP Lufkin twin crank unit, skid type.
1—20 HP OP815 Brad-Foote new gear box; 50,000' or 2" upset 30' tubing, No. 1 used, 50,000' of 2½" upset 30' tubing, No. 1 used. Sabine Machine & Supply Company, telephone 594 or 611, Kilgore, Texas.

New 126' Lee C. Moore Jack-knife derrick per DWG JA-5123; 4'6" drop, substructure for 3 NKU Waukesha's—85% new price.

1—C. T. 5 Houston Portable Drawworks—New—85% new price.

1—4 mtr. Allis-Chalmers drive unit, V-belt, friction clutches, 440 h.p.—55% new price.

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■ Petroleum Geologist, Master Science, 26, married, wants general geologic work, Mid-Continent area. No experience, except Navy executive and engineer. Address: Box 61, c/o The Oil Weekly, Houston, Texas.

■ American, 29, presently employed as instrument man on construction project in Venezuela. Available soon after first of year. Experienced seismograph and construction surveying, varied engineering office work, payroll. Speak Spanish, handle native labor. Prefer position elsewhere in Latin America. Address: Box 67, The Oil Weekly, Houston, Texas.

■ Mechanical Engineer. Varied and intensive experience in the design of heavy high quality machinery and of instruments, and in engineering research. Recent experience in design and research in oil production machinery and equipment. Interested only in a serious and continuing undertaking in the design or manufacture of machinery. Location, temperate or cold climate. Salary (domestic), 6,000 to 8,000. Available January 1, 1946. Address: Box 63, c/o The Oil Weekly, Houston, Texas.

■ Geophysicist—Engineering background with B.S. and M.S. in geology and geophysics. Ten years experience in Texas, Louisiana Gulf Coast, and California. Interested in interpretation and coordination of geophysical and geological data, interpretational research, or supervision of exploration program for small, reliable company. Will consider most domestic areas, provided location is reasonably permanent. Box 62, c/o The Oil Weekly, Houston, Texas.

HELP WANTED

■ Seismic Observer with some experience for work with established contract company in central U. S. Salary and expense allowance. Address: Box 65, c/o The Oil Weekly, Houston, Texas.

PETROLEUM ENGINEER. Graduate with or without experience, for work in South America. Salary open. Write: Atlantic Refining Company (Room 900), Box 7258, Philadelphia 1, Pennsylvania.

EXPLORATION GEOLOGIST. Work in foreign countries. Should have three years experience in mapping Rocky Mountains, California or foreign. Write Atlantic Refining Company (Room 900), Box 7258, Philadelphia 1, Pennsylvania.

HELP WANTED

■ WANTED: By The Superior Oil Company, young men with college background in geology. Single men preferred. Write P. O. Box 96, Bakersfield, California. Apply 1425 Union Avenue, Bakersfield, California.

■ WANTED: By The Superior Oil Company, young men with college background in electronics. Single men preferred. Write P. O. Box 96, Bakersfield, California. Apply 1425 Union Avenue, Bakersfield, California.

■ Exceptional opportunity for right man. Large Manufacturer Heat Transfer Equipment catering to refineries and chemical plants desires services of Sales Engineer for coastal and North Texas territories. Must be familiar with heat transfer applications and have wide acquaintance with refinery personnel. Salary, expenses and commission override. First letter should include all qualifications and background and a small photograph. Address: Box 66, c/o The Oil Weekly, Houston, Texas.

WELL GEOLOGIST. To watch progress of wells in Eastern Venezuela. Care for samples, picks casing points, core points, etc. Write: Atlantic Refining Co., (Room 900), Box 7258, Philadelphia 1, Pennsylvania.

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A large manufacturer having representation and offices in all oil producing states, calling on field superintendents, purchasing agents, and warehousemen, desires to contact a manufacturer who desires sales representation for his product. Address: Box 52, c/o The Oil Weekly, Houston, Texas.

WANTED TO BUY

■ WANTED TO BUY: Complete power rig suitable for workover. Compounded draw works. No junk wanted. Please give condition and price. Address: Box 57, c/o The Oil Weekly, Houston, Texas.

■ WANTED TO BUY: One 3-inch tubular leg derrick 72 to 87 feet high. Near Houston. Address: Box 58, c/o The Oil Weekly, Houston, Texas.

■ WANTED TO BUY: 2—80,000 bbl. used riveted steel Tanks; knocked-down; match marked; f.o.b. cars for our export. Give best price; complete specifications. J. Parker Thompson Company, 507 Fifth Ave., New York City.

■ WANTED: Used 36" Parkersburg Hydromatic brake. Please give condition and price. Address: Box 59, c/o The Oil Weekly, Houston, Texas.

■ WANTED TO BUY: Steam or power rig for nine or ten thousand foot drilling complete with three and four inch drill pipe. Must be in good shape. Furnish inventory, price and location. Address: Box 60, c/o The Oil Weekly, Houston, Texas.

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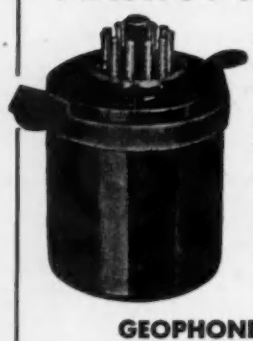

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25.4-gr, ¼-in, gor 271/1, tp 510 lbs, td 3970 ft.

Chambers County — Failure: Standard of Tex.'s State of Tex. 1, 660 fr sw&sel sect 292, abnd 10,001 ft.

Ft. Bend County—Failure: Jack W. Frazier-C. A. Wiggin's Great Southern Life Ins. Co. 1, 5000 fr sl 8800 fr wl 1177.7-ac lse, 12,000 e of wl of Ed. Robertson sur, sso 6317-18 ft, abnd 6410 ft.

Jefferson County — Failure: Goldrus Drlg. Co.'s Ed. G. Geheb 1, 467 fr n&el ne 25-ac of 105-ac lse, HT&B sur, 11, abnd 8879 ft.

EAST TEXAS WILDCATS

Franklin County—Failure: Humble's Geron 1, 620 fr m/n/nl 578 ewl of 202-ac tr and J. K. Rogers sur, elev 321 ft, Nacatoch 622 ft, Pecan chalk 1480 ft, Blossom-Tokio 2361 ft, Austin 2595-2680 ft, Eagle Ford 2680 ft, Woodbine 3206 ft, Georgetown 3850 ft, Goodland 4796 ft, Paluxy 4860 ft, Glen Rose 5290 ft, abnd 5504 ft.

Henderson County—Failure: Delta Dr. Co.'s Joe Hurt-Miller 1, 467 nsl 1410 wel of Isaac Roberts sur, Navarro 2805 ft, Pecan 3425 ft, Austin 4575-4835 ft, Sub-Clarksville 4864 ft, Woodbine 5075 ft, abnd 5250 ft.

NORTH TEXAS WILDCATS

Archer County—Failures: C. N. Drlg. Co.'s Long 1, 150 snl 1000 ewl blk 94, J. W. Harris sur, abnd 1383 ft.

N. D. Goldsmith's Kunkel 1, 650 out swc blk 12, Crawford Pasture sbdn, Isaac Holeman sur A-162, elev 1146 ft, Gunsight 1207 ft, Bend 4534 ft, Barnett 5094 ft, Mississippi 5138 ft, abnd 5185 ft.

Clay County — Failure: Fain-McGaha-Republic Nat'l Gas Co.'s Edwards 1, 4064 s 1250 e of m/n/nwc S. C. Beldon sur, elev 869 ft, Simpson 6004 ft, abnd 6155 ft.

Cooke County—Failures: S. D. Johnson-Alco Valve Co.'s R. L. Trew 1, 6350 snl 1300 wel M. Langham sur A-564, Ellenburger 1928 ft, abnd 1961 ft.

Magnolia's A. J. Cook 1, 330 nsl 990 ewl BBB&C Ry. sur A-179, elev 754 ft, Variegated shale 2220 ft, Winger 4464 ft, Ellenburger 4890 ft, abnd 5008 ft.

Young County—Failure: Fred M. Manning-D. M. Ross' Hinson 1, 1401 nsl 467 ewl sect 1454, TE&L Co. sur, elev 1175 ft, Bend 4330 ft, Mississippi 5075 ft, abnd 5151 ft.

Young County — Oil Discovery: Tom P. Hunter et al's G. H. Roach 2, 542 wel 767 nel sw¼ sect 304, TE&L Co. sur, 1¼ mi e by s Spring Creek, elev 1217 ft, pump 10 bbls oil, 10 bbls wtr, broken sand 1220-27 ft, td 1234 ft.

NORTH TEXAS NEW PAY TEST

Archer County—Burns-Benson Deep Discovery: L. T. Burns et al's R. Campbell 1, 467 nsl 1400 wel sect 1388, TE&L Co. sur, ½-mi sw of 4600-ft Bend prod, elev 1145 ft, Mississippi 5083 ft, pump 151 bbls 45-gr oil, 10% wtr, 500 gals acid 5085-97 ft, td.

WYOMING WILDCATS

Weston County—Oil Discovery: Morton & Seigel's State 1, nw sw ne 16-44n-63w, Skull Creek area, 7 mi sw of Newcastle, flow 50 bbls fr Newcastle, topped 3331 ft, td 3600 ft.

Park County—Failure: General Pet.'s 1-29P, 29-47n-100w, Gooseberry area, abnd 6095 ft.

Carbon County—Failure: British-American U.P. 1, ne 26-21n-78w, abnd 7170 ft.

WESTERN CANADA WILDCAT

South Alberta Plains — Princess Failure: New Ranchmen's Oil Homestead O&G 1, lsd 15 36-21-14w4th, Sunburst sand 3345-3345.5 ft, Chert 3365-71 ft, so & wtr, Madison lime 3372 ft, abnd 3375 ft.

WILDCAT STARTS

ARKANSAS

Miller County: Deep Rock Oil Corp.'s J. S. Pittman et al 1, c nw se 17-18s-19w, mim.

Ouachita County: Skelly's Adams 1, c nw nw 29-13s-18w, dr 1030 ft.

CALIFORNIA

Ventura County: British-American-Superior Oil Co.'s Block 1, 13-4n-18w, Del Valle area, lcn.

Los Angeles County: Lehr Co.'s 1, 33-8n-8w, Hi Vista area, lcn.

A. W. Lyddon's Wm. Rowland Estate 1, 17-2s-10w, Turnbull area, rur.

Texas Co.'s Kern 52-SW-18, 18-4n-17w, Del Valle area, cellar.

Kern County: Belridge Oil Co.'s 62-W-33, 33-28s-21e, South Belridge field, deep test, dr.

General Petroleum Corp.'s Sunset 21-A, 21-11n-23w, Santiago area, rur.

Tide Water's Luck 54, 30-28s-28e, Kern River fld deep test to basement, lcn.

Wilshire Oil Co.'s Lehman 1, 18-28s-20e, Belridge area, lcn.

Kings County: F.S.&D. Oil Co.'s Core Hole 2, 8-24s-18e, Pyramid Hills area, dr.

Kings Exploration Co.'s Avenal 1, 18-23s-17e, Reef Ridge area, lcn.

Glenn County: Gen. Pet. Corp.'s Norman 1, 5-18n-1w, Packer Island area, gas test, lcn.

COLORADO

Rio Blanco County: Calif. Co.'s Emerald 3, sw sw 34-2n-102w, dk.

ILLINOIS

Cole County: E. P. Jarvis' Akers 1-A, nw sw sw 1-11n-7e, lcn.

Tom L. Smith et al's Andres 1, ne se nw 22-11n-7e, lcn.

George S. Engle's Hortenstein 1, sw ne se 5-12n-8e, dr 349 ft.

Marion County: Texas Co.'s Soldner 1, ne se ne 36-5n-4e, dr 264 ft.

Saline County: Nat. Assoc. Pet. Co.'s Phelps 1, ne ne sw 14-8s-5e, dr.

Wabash County: Oliver Leighty's Schroder 1, nw sw se 31-2n-12w, dr.

White County: Pittsburg Coal Co.'s Land 1, nw nw se 25-5s-9e, dr.

KANSAS

Barber County: H. A. Hershfield's Wolf 1, ne ne sw 19-30s-11w, lcn.

Cowley County: Consolidated Gas Utilities' Mendenhall 1, c nw nw 31-31s-7e, lcn.

Fred Manning's Lester 1, nw sw nw 23-33s-3e, lcn.

Dilworth S. Hager's Hunt 1, se se sw 4-34s-5e, lcn.

Ness County: Aladdin Pet. Corp.'s Gano 1, se corner 20-19s-26w, mim.

Woodson County: M. J. Scott et al's Hoffmaster 1, ne ne nw 30-25s-16e, lcn.

NORTH LOUISIANA

Richland Parish: American Liberty Oil Co.'s Mengel Co. 5, c se se se 19-17n-83, Paluxy test.

SOUTH LOUISIANA

Assumption Parish: William Helis' Norman-Breaux Lbr. Co. 1, start nec sw¼ sect 46 gs s 1650 th w 657 to lcn in 46-12s-13e, sw flk Napoleonville area, 1 mi s 6900-ft prod, 9000-ft test.

St. Tammany Parish: Atlantic's State-Lake Pontchartrain Lse 318-1-A, 17,368 s 767 e of sec 11-9s-12e, in Lake, 12,000-ft test.

MICHIGAN

Allegan County: C. W. Kendall's Arnold 1, ne nw ne 33-1n-11w, lcn.

Arenac County: Ward Oil Co.'s Petty 1, sw sw nw 18-19n-7e, dr.

Clare County: Ashby Oil Co.'s Wiegert 1, sw ne se 25-18n-6w, lcn.

Gratiot County: A. E. William's Krahl 1, se ne se 15-9n-1w, rig.

Montcalm County: Allegan Pipe's Davis 1, nw nw nw 36-10n-5w, dr.

Newaygo County: Taggart's Helms 1, sw sw sw 24-14n-11w, rig.

Clinton County: Merrill's Lurnca 1, ne nw nw 2-7n-2w, dr.

MISSISSIPPI

Wilkinson County: Danciger O&R Co.'s Geo. W. Armstrong 1, 5-4n-2w, lcn.

MONTANA

Blaine County: George Harris et al's Winterrowd 1, se se se 6-35n-21e, Cherry Ridge area, lcn.

Wheatland County: R. C. Tarrant's C. F. Williams 1, c ne sw 29-9n-13e, Haymaker structure, lcn.

NEW MEXICO

Roosevelt County: Southern Union Gas Co.'s Lodora Lucas 1, c se sw 5-2n-30e, 6500-ft Pennsylvanian test.

OKLAHOMA

Creek County: H. A. Sherrick's Tull 1, ne ne nw 6-19n-7e, rust.

Hughes County: Wm. Bartlett & Hearthman's Howell 1, se sw sw 10-6n-8e, dr.

Iron Drlg. Co.'s Davis 1, se ne nw 15-6n-8e, dr 2500 ft.

Logan County: S. B. Howard's Dunbar 1, ne ne ne 27-16n-1w, lcn.

J. E. Trigg's Acton 1, nw nw se 24-19n-4w, rig.

Pawnee County: Schermehorn Oil Co.'s Huston 1, se se ne 13-20n-5e, lcn.

Big Four Pet. Co.'s Witt 1, ne ne sw 35-21n-7e, rust.

J. R. Porter & Trigg's Pawnee 1, ne ne ne 29-23n-4e, dr 312 ft.

Pottawatomie County: Ace Gutowsky's Belcher-Eaves 1, sw ne se 10-10n-2e, rog.

WEST TEXAS

Ector County: Phillips-Unit's Millard Eidson-Scharbauer 1, 1997 snl 1827 wel PSL 25, blk B-15, ¾-mi w of Penwell field, Ellenburger test.

Pecos County: Geo. T. Abell et al's Scharb-

Say "DOUBLE E"
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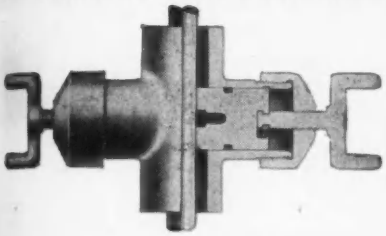
BLOWOUT PREVENTER



The "Double E" Blowout Preventer for sucker or polished rod works on the same principle as the stripper but is constructed somewhat differently. Instead of the soft rubber packing, cylindrical steel rams are used, to which has been molded a fabric reinforced sealing element. This oil resistant synthetic rubber element backed by the steel ram prevents leakage against high pressures.

The use of the Blowout Preventer in conjunction with the Sucker Rod Stripper provides ideal protection against handling wet rods and pressure surges in heading wells. When the two devices are used together, the top of the blowout preventer is threaded 3" line pipe male to screw into the bottom of the Stripper Housing.

"DOUBLE E" Products
EQUIPMENT ENGINEERS
INCORPORATED
2039 AMELIA STREET
DALLAS 9, TEXAS

Blackman 1-22, 505 fr swl 330 fr sel H&TC Ry. 22, blk 3, 2500-ft cable test.

R. N. Beakley-J. E. Whiteside's University-Lee 1, c nw nw sect 31, blk 16, Taylor-Link deep test, 8500-ft Ellenburger test.

Schleicher County: Geo. P. Livermore's Tom R. Henderson 1, c ne se GH&SA Ry. 78, blk 1, spud 6500-ft Ellenburger test.

WEST CENTRAL TEXAS

Jones County: Hedrick Oil Co. et al's Sarah T. Morrison 1-C, 4647 e 2821 n of nwc of D. T. Bruce sur 135, but in G. Martinez sur 136, 2500-ft cable test.

S. D. Johnson et al's C. J. Oman 1, 330 out nec s½ w½ H&TC Ry. 20, blk 3, 3500-ft Palo Pinto test.

Mills County: M. M. Miller et al's A. W. Savoy 1, 3493 snl 4854 wel of E. M. Pease sur 94, 2800-ft cable test.

Palo Pinto County: Dunn-Powell & Kirby's V. A. Sikes 1, 700 nsl 1600 ewl sect 1709, TE&L Co. sur, 1400-ft cable test.

Runnels County: W. W. Gruber-Dr. Emil Ott's Otto J. Halfmann 1, c nw nw GH&H Ry. sect 501, 3 mi s Ballinger, 3500-ft test.

E. M. Wahlenmaier-Red Davidson's J. W. Barr 1, 1950 wel 15,377 nsl C. Montez sur 230, 3600-ft test.

Shackelford County: Roeser-Pendleton-Continental's Cook 2-A-26, 220 out nwc se¼ E.T. Rl. sect 26, 1500-ft cable test.

SOUTH CENTRAL TEXAS

Zavala County: Humble's Marrs McLean 1, 660 fr wl 660 fr sl 240-ac lse, blk 121, Mariso Agierre sur 76, 4200-ft test.

SOUTHWEST TEXAS

Duval County: J. H. Howell's Geo. B. Parr 1, 1320 fr el 330 fr sl sur 185, 485-ac lse, 6500-ft test.

LOWER TEXAS COAST

Bee County: W. C. McBride's H. W. Frels 1, 1170 fr nel 330 fr sel Harry Frels 200-ac lse, Teddoro Molina sur, woc.

Sam E. Wilson's Page Est. 1, start sec 400-ac lse go 5383.3 w sw alg sely/l lse th 467 n nw at ra to lcn, C. Rivas sur, ru.

UPPER TEXAS COAST

Wharton County: Wirt Franklin Pet. Corp.'s Minnie Howell 1, 467 fr s&el 160-ac lse, ETRR sur 75, Hillje area, 7500-ft test.

EAST TEXAS BORDER COUNTIES

Harrison County: R. W. Williams' J. M. Furrh Est. 1, start m/wn cor Francis O'Neil sur, go 3100 ne alg nwl th 632 se at ra to lcn, 3 mi w of Elysian flds, lcn.

Shelby County: Hiawatha Oil Co.'s Pickering Lbr. Co. 1, 960 fr sl 570 fr el swc Henry Fountain Tr, W. J. Brittian sur, dr surf hole.

Hiawatha O&G Co.'s Pickering Lbr. Co. 2, 2200 fr nl 630 fr wl W. J. Brittian sur, ru.

EAST TEXAS

McLennan County: George Michael et al's J. A. Roberson 1, 1224 fr m/w/sl 1920 fr nwl of C. J. Carrier sur, 1½ mi sw Lorena, rig for 2500-ft test.

Robertson County: C. L. Brown, Jr. et al's P. C. Gibson 1, 3600 fr nel 4150 fr nwl Jesse Webb sur, 1½ mi nw Calvert, 2400-ft test.

WYOMING

Fremont County: Continental's Shoshone 767, Well 4-Center lot 6, 6-6n-2w, Circle Ridge area, cable tool deep test of horizon below Tensleep.

Platte County: Continental's Reno 1, sw se sw 1-30n-70w, s of Orin Junction, Morrison test, lcn.

Kansas Abandonments

The Kansas Corporation Commission reported 140 wells plugged during October, a decrease of 12 compared with the same month last year. Of the wells plugged, 50 were depleted oil wells, 8 were depleted gas wells, 2 were lost holes, 6 were salt water disposal wells and 74 were failures. A total of 1154 wells were plugged in Kansas during the first 10 months of 1945.

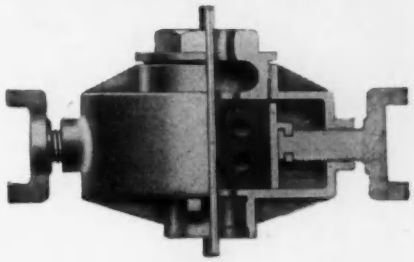
Tanker Construction

Tanker construction continues at a high rate, 23 oil carriers being delivered by American shipyards during October, according to the Maritime Commission.

Deliveries included 17 standard tankers, five coastal tankers and one naval tanker, with Sun Shipbuilding and Dry Dock Company, Chester, Pennsylvania, heading the list with five T2 tankers.

Say "DOUBLE E"
WHEN YOU WANT . . . . The Best

SUCKER ROD STRIPPER



The "Double E" Adjustable Sucker Rod Stripper is the most economical and practical tool of its type. It not only does an excellent job of cleaning oil and paraffin from sucker rods as they are being pulled, but it has the very fine advantage of having retractable rubbers which can be withdrawn into the housing when not needed for stripping. This permits a long rubber life and also permits adjusting the rubbers against the rods to compensate for normal wear. The packing elements are of soft rubber (two halves) and readily accommodate any size rod or coupling. An examination of the cut shows how the packing is screwed against or backed away from the rods.

"DOUBLE E" Products
EQUIPMENT ENGINEERS
INCORPORATED
2039 AMELIA STREET
DALLAS 9, TEXAS

"Best Bet Yet"

This reinforced disc of PBX synthetic rubber has many time and money saving advantages. Reduces fire hazard—Reduces costly fishing—Cleaner tubing and floors—Making for safer working conditions—Protection to crew—Automatic action.

See Composite Catalog

Patterson-Ballagh TUBING WIPER

Los Angeles 1 • Houston 10 • New York 6

SQUEAKS from the BULL WHEEL

Coming Events

Said the proud parent upon meeting the new first grade teacher. "Very happy to know you, Miss Smith. I am the father of the twins you are going to have next September."

Changing the Subject

"And how is your good wife, Sultan?"
"Okay—but the others are more fun."

Red Lips

"What makes you think she's a Russian?"
"Always making advances."

Full Evening

"Daughter, why did you take so long saying goodbye to that boy last night?"
"Well, after all, when a fellow takes you to a show, the least you can do is kiss him good night."
"But I thought you said he took you to a football game, to dinner, a show and then a dance?"
"He did."

Blind Date

Silence.
More silence.
Strained silence.
He: "Aren't the walls unusually perpendicular this evening?"

Our Father's Wisdom

Adam and Eve in the Garden had a pretty hard day naming the animals.
"Eve," said Adam, "let's call this one a hippopotamus."
"Why?"
"Well, it looks like a hippopotamus, don't it?"

And the Calf, Too

A country girl milking a cow called to her father, "Pop, there's a man coming up the road."
"Then go in the house!"
"But, Pop, he's a sailor."
"Take the cow with you!"

Farewell to Learning

"Johnny, your lessons aren't done today. Where did you go last night?"
"To the movies with a girl."
"Get out of this class for a week. And you, Tommy, where did you go last night?"
"Out parking with a girl, teacher."
"Go home and stay there for two weeks. Oscar, where are you going?"
"Teacher, my school days are over."

Well Rounded

"She's a nicely reared girl."
"Yep—and not bad-looking from the front, either."

No Invitations

"Hot dog! My girl finally said 'Yes' last night."
"Congratulations. When's the wedding?"
"What wedding?"

Grab Its Throat

"You're drunk. I'll take you home."
"No. Wife'll smell m' breath."
"Then hold your breath."
"Can't. Too strong."

Jewels of Boredom

"What do you mean by saying the dates you had with me were like pearls?"
"Neckless, honey, neckless."

Practice Makes—

Kiss me, darling, kiss me.
Hold me very tight;
I want to get in practice
For a date tomorrow night.

Poet's Nook

There was a young lady named Carol
Who loved to play stud for apparel.
Her opponent's straight flush
Brought a maidenly blush,
And a quick trip home in a barrel.

Encore

He took her gently in his arms
And pressed her to his breast;
The lovely color left her face.
And lodged on his full dress.

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MEN IN THE INDUSTRY NEWS

Ross W. Thomas, Phillips Petroleum Company, has been made manager of research and development at the company's research center and will act as executive assistant to **G. G. Oberfell,** vice president of the research department. **G. R. Benz** succeeds Thomas as manager of the chemical products department.

Ross W. Thomas

Thomas started with the Phillips organization in 1926 as construction superintendent, later becoming research engineer on liquefied gases. Following a year as assistant director of research, he was named vice president and general manager of Philgas Company, a subsidiary formed to market liquefied petroleum gases. Since July, 1940, Thomas has also been president of Hycar Chemical Company, an affiliate owned by Phillips and The B. F. Goodrich Rubber Company.

Richardson Pratt, former vice president of The Carter Oil Company and more recently assistant treasurer and head of the budget department of Standard Oil Company (New Jersey), has resigned to devote full time to personal interests. He is succeeded in the budget department by **Dr. C. L. Burrill.**

In 1927 Pratt resigned as vice president and director of the Carter company to assume similar positions in the newly formed Standard Oil Company of New Jersey. In 1934 he became assistant treasurer of the parent company.

Dr. Burrill has been a member of the economics department of Jersey since 1940 as a specialist in petroleum economics.

Steve Wakner, former independent oil operator, has joined Kingwood Oil Company and is stationed at Evansville, Indiana, in the land office.

Earl R. Jukes has returned to Cardwell Manufacturing Company after three years overseas as a major with the Army Air Forces, and has been reassigned to his prewar position of sales representative in Illinois, Indiana, Kentucky and Ohio.

Earl R. Jukes

While overseas Jukes was director of material and executive to the chief of staff of material and maintenance, First Air Division, Eighth Air Force.

Frank P. Donohue has been appointed manager of the oil loan department of the National Bank of Commerce of Houston.

Frank P. Donohue

Donohue joined PAW in 1942 as Director of Reserves for District 2 and later became Chief of the Foreign Production Section of PAW. During the course of the war, he headed United States oil missions to Trinidad, Venezuela, Colombia, Ecuador and Peru.

Capt. F. V. Lowden has been named veterans' coordinator of Standard Oil Company (New Jersey) and its affiliates. He will be responsible for implementing the company's policy of reinstatement of returned veteran employes.

A member of the legal department of the company since 1920, Captain Lowden returns after 42 months in the Coast Guard, where he was in charge of port security for the Third Naval District. He is a veteran of World War I, where he served overseas as a major in the field artillery.

William C. Impt, district geologist for Stanolind Oil and Gas Company in Kansas, has been transferred to the company's Tulsa office and has been succeeded by **T. G. Wright,** assistant to Impt and has been with Stanolind for 12 years.

Dr. Bailey Willis former president of the Geological Society of America and a member of the faculty of Stanford University, spoke before the Tulsa Geological Society on "Terrestrial Dynamics," discussing the reactions of atomic energy within the earth's surface.

Paul R. Rogers, formerly with the U. S. Engineers office at Tulsa, has established the Engineers Service Center at 311 East 4th Street, Tulsa, and will specialize in oil field drafting service.

Stanley M. Morley has resigned as senior attorney of the Federal Power Commission to become associated with the law firm of Wheat, May, Shannon and St. Clair in Washington, D. C., and San Francisco. Before **Col. Orla St. Clair** of California became a member, the firm was known as Wheat, May and Shannon.

A. A. MacKrille, recently a commander in the Navy and assistant manager of Shell Oil Company's national sales department before entering the service in 1942, has succeeded **C. B. Singleton,** retired, as Shell's national sales manager. Singleton was with the Shell organization 32 years.

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Standco Brake Lining Co.
HOUSTON

BE SURE TO CHECK THE
TRADING POST SECTION
ON PAGE 87 OF THIS ISSUE

MEN IN THE INDUSTRY NEWS

Howard W. Booth has been appointed Manager of sales, Wilson-Snyder Manufacturing Division of Oil Well Supply Company, Braddock, Pennsylvania.

H. W. Booth

Booth was assistant to the chief engineer of Oil Well Supply Company for 12 years, prior to which he served in an engineering and production capacity with Wilson-Snyder.

He entered the employ of Wilson-Snyder immediately after receiving his Bachelor of Science degree in mechanical engineering from Penn State College in 1930.

Home offices for Oil Well Supply are at Dallas.

L. Brundall of Houston, former exploration geologist with Shell Oil Company, has been discharged from the Navy after three years as a photographic intelligence officer.

Jess Hengst has resigned from Barnsdall Oil Company to become district geologist at Evansville, Indiana, for Ryan Oil Company.

Lt. Robert J. Gutru, former geologist with Cities Service Oil Company, was recently discharged from the Navy and has rejoined Cities Service as geologist at Mt. Pleasant, Mich.

Robert Coker, independent operator, has opened offices in the National Bank of Commerce Building, San Antonio.

Chester A. Baird has been named resident manager of Venezuelan Atlantic Refining Company and will assume his post in Caracas shortly after the first of the year. Baird, who will be in charge of the company's activities in Venezuela, is a native of Columbus, Ohio, and is a graduate of Ohio State University. From 1925 to 1944 he was with subsidiaries of Gulf Oil Corporation, and served as executive assistant to the president of Mene Grande Oil Company in Venezuela for four years of that period.

Ernest Spuhler has been appointed general sales manager of the Fairmount Tool & Forging Company, Cleveland.

J. L. Pinkard has joined Rector Well Equipment Company as sales representative, covering the West Texas territory. He will assist **W. P. Knight.**

J. L. Pinkard

Pinkard has been in the Army since May, 1941. Thirty-nine months of his service were spent overseas. He was with the Producers Drilling Company for five years, serving in both the drilling and production departments.

D. W. Vernon, general manager of sales for A. Leschen & Sons Company, St. Louis, Missouri, has been elected to the board of directors.

Herbert D. Rollo has been appointed New England district sales manager of Wickwire Spencer Steel Division, Colorado Fuel and Iron Corporation, with headquarters in Boston, Massachusetts.

C. H. Conway has been placed in charge of Amerada Petroleum Corporation's new district land office at Shreveport, covering north Louisiana and Arkansas. **Frank Gifford** will be geological scout. **Ben Witt,** formerly in Shreveport, has been transferred to the company's Jackson, Mississippi, office.

JET BLACK MARKINGS ON SATIN CHROME

The heavy steel line of the Lufkin Chrome Clad Oil Gaging Tape is covered with a satin chrome "life jacket." This rust-resistant chrome coat means longer life and easier oil level measuring. Jet black markings are sunk below the line surface where they can't wear out. Oil level shows up clearly against this non-glare finish. Solid brass plumb bob. Case hardened steel frame. For easy, accurate measuring, use Lufkin Chrome Clad Oil Gaging Steel Tapes. Order through your supply house. THE LUFKIN RULE CO., SAGINAW, MICH., New York City.

LUFKIN FOR ACCURACY

Deaths

C. F. Wood, 50, divisional auditor for the southern division, retail sales division, Mid-Continent Petroleum Corporation, died November 17 near Tishomingo, Oklahoma, after being stung by a wasp while on a hunting expedition. He resided in Tulsa. Death was attributed to a blocked windpipe caused by swelling resulting from the wasp sting. Wood had been with Mid-Continent since 1928 and was formerly stationed in Lincoln, Nebraska.

Fred M. Scott, former Oklahoma independent oil man, died November 6 at Huntington, California. He was active in Oklahoma for more than 20 years before moving to California.

William J. Sloan, of Bradford, Pennsylvania, vice president of Sloan & Zook Company, oil producers, died after a heart attack November 9. He had been a partner of **Ralph T. Zook** for over 30 years.

Lindsey H. Dunn, 61, Houston independent oil operator, died November 20.

1—Earth Movers

The Thew Shovel Company, Lorain, Ohio, announces four new heavy-duty machines, each of which incorporates features developed from wartime engineering experience. The line, designated as the Lorain "41" Series, consists of a chain-drive crawler machine and three rubber-tired machines, one with four-wheel drive, one with six-wheel drive and a third of the self-propelled type.

The two-speed crawler machine features a mounting that is longer, wider and heavier. Standard treads are 30 inches in width and travel speeds in either direction are ¾ and 1⅝ miles per hour. Steering is done from cab in any swing position of boom. Tread and travel lock is also a new development, being of the positive, four-way ratchet and pawl type. The unit, which is convertible to shovel, crane, dragline, clamshell or backdigger, has increased crane, clamshell and dragline capacities.

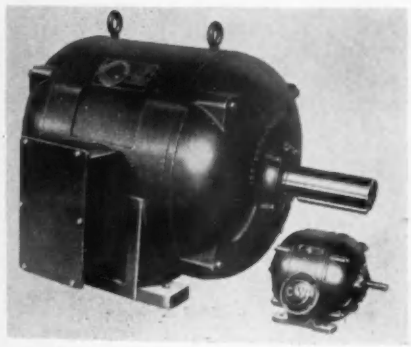
The four-wheel drive Moto-Crane is of 20-ton capacity with specially designed six-wheel carrier for shovel and crane loads. With ten speds forward and two reverse, this new rubber-tired machine has a speed range of from one to 28 miles per hour. Travel power is supplied through two worm-driven axles to four dual-tire rear wheels which are equipped with air brakes. This unit is also convertible to shovel, crane, dragline, clamshell or backdigger.

The six-wheel drive Moto-Crane offers a heavy-duty, 20-ton capacity crane that was developed for and used in military service. This crane has double-reduction drive on all axles, eight speeds forward and two reverse, and will travel from one to 31 miles per hour. Steering is air power-assisted and air brakes are on all six wheels.

The self-propelled crane is of the single engine, single-operator type and power is supplied on four worm-driven rear wheels. There are four travel speeds ranging from one to 7 miles per hour in both directions. The hoist, swing, travel and boom derricking may be effected simultaneously. Steering is air powered. This 20-ton capacity unit is equipped with air brakes on four rear wheels and has dual-tired front wheels of the differential type to eliminate scuffing.

2—Motors

Crocker-Wheeler division of Joshua Hendy Iron Works, Ampere, New Jersey, has added three new frame sizes to its line of alternating-current, squirrel-cage Protected Type Motors, now offered from one to 200 horsepower.



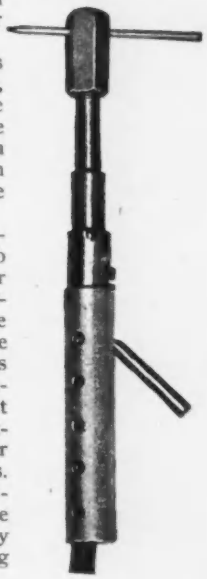
Priced the same as the open type and rated 40 C rise, full-load continuous duty, with a 15 percent service factor, these motors provide protection against dripping liquids, falling metal chips and other foreign matter.

Sizes built in standardized frames, 203 to 326 inclusive, have no openings in the frame or shields above the horizontal center line. Standardized frames 326 to 505 as well as the three, newly added, larger sizes are basically the same in construction with the addition of two shielded, air exhaust openings in the upper half of the frame. The design of these openings precludes any possibility of falling liquids, etc., entering the motor.

The company's patented centrifugal bearing seal is used in all ball-bearing machines. This seal permits the use of softer grease for better lubrication and longer bearing life.

3—Electrode Holders

Tweco Products Company, Wichita, Kansas, has announced a new line of air-cooled carbon electrode holders for manual welding.



The line includes four sizes, 150, 200, 300 and 500-ampere models. Positive "Hol-Grip" design with ample length and ventilation are features.

The average carbon arc welding job is done with either the 13½-ounce, 150-ampere holder or the 20-ounce 200-ampere unit. These two units are furnished optionally with or without special "Quick-Attach" whip cable for short duration jobs. The 300 and 500-ampere models are suitable for heavy welding, and cutting jobs.

4—Pipe Gripping Device

J. A. Campbell Company, Long Beach, California, has designed a pipe-gripping device to hold small pipe in any vise without crushing or marring the surface or threads.

Known as the Nip-Grip, the device

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Please have manufacturers send me, without obligation, more information on items shown in November 26 issue of The OIL WEEKLY as checked below:

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13 14 15 16 17 18 19 20 21 22 23 24

In addition to information checked above, I would like more data on products or services advertised elsewhere in this issue by_____Company

Name_____Title_____

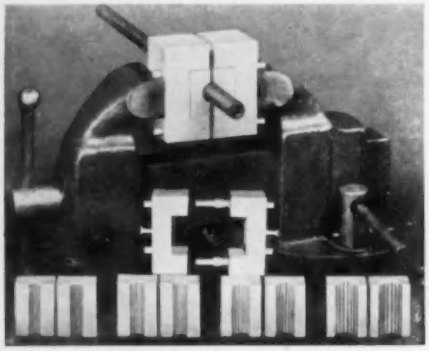
Company_____

Address or P. O. Box_____

City_____State_____

(To avoid delay PRINT or TYPE clearly name, company and mailing address)

consists of two light alloy retainer blocks in which hardened steel inserts are slipped to hold various pipe sizes. Inserts of ⅛, ½, ⅜ and ½-inch are furnished. Springs automatically spread the blocks apart when the vise is opened. It can be positioned horizontally or vertically and is held by pins.



Use the Coupon

For free copies of Manufacturers' Literature or more information on products described on these pages, use the convenient mailing coupon on page 93.

Literature

5—Boilers

Kewanee Boiler Corporation, Kewanee, Illinois, has issued Catalog 96 "E" which illustrates in color and describes with fully detailed tabulations and diagrams Kewanee High Pressure Firebox Boilers. Other high pressure boiler specifications are also condensed in tables with illustrations on All Weld Hi-Test and on Scottie Jr., including the new six-horsepower size.

6—Air, Gas Cleaner

Aerotec Company, White Plains, New York, announces an air and gas cleaner suitable for installation on intakes on Diesel and gas engines. The cleaning tube can be used in multiples up to any desired capacity, and is said to have exceptionally high precipitating efficiency and develops no pressure build-up. Clean air is exhausted from the central tube while dust is precipitated from the bottom.

7—Vibration Eliminator

Blaw-Knox Company, Pittsburgh, has published a booklet on "Blaw-Knox Functional Spring Hangers and Vibration Eliminators," giving conclusions of prefabricated power piping engineers regarding the design of piping layout for flexibility. The booklet gives many details concerning standard and special types and sizes of functional spring hangers and vibration eliminators, with instructions for their installation, and engineering information which will be of help when adoption of this type of support is under consideration.

8—Starch Product

Parr Products, Inc., New Orleans, has released a folder about Parrite, the Cold Water Starch Gel for drilling operations and its use as a preventive against unnecessary filtration losses. The folder describes the dry process of manufacture of this cold water starch product, which may be run in either acid or alkaline solutions without fear of rapid deterioration.

9—Power Hammer

McKiernan-Terry Corporation, New York, has issued a bulletin, "The Mechanical Blacksmith's Helper," describing the McKiernan-Terry Blacker Power Hammer, its purposes, design and construction, installation and operation. One section shows a complete, characteristic set of anvil tools which may be made by a smith using the Blacker Hammer. Four sectional drawings illustrate the hammer's component parts, and photographic views of the hammer in several positions are shown.

Equipment to Be Leased By Tube Turns from RFC

George O. Boomer, president of Tube Turns, has announced that the board of directors has approved the leasing from Reconstruction Finance Corporation of $3 million worth of Defense Plant Corporation equipment, which had been installed for war work. The board also authorized the purchase of additional equipment costing $500,000, to round out the company's production facilities.

Personnel Changes Made by Maloney Tank Manufacturing

Four veterans of the Parkersburg Rig & Reel organization who have been affiliated more recently with the Crawford Tank & Supply Company, figure in personnel changes at the Maloney Tank Manufacturing Company of Tulsa.

S. P. Wallace, formerly president of Crawford Tank & Supply Company, has been named sales manager of Maloney Tank Manufacturing Company with headquarters in Dallas; L. Glenn Rader, formerly Crawford director and district manager at Houston, will be the Maloney division manager in that city.

Arthur J. De laHoussaye, formerly Crawford representative in Southern Louisiana, will be district manager for for Maloney in New Orleans, and W. B. Brawner, Crawford representative at Corpus Christi, will continue as Maloney district manager for Southwest Texas.

Other personnel changes which have been announced include:

E. C. Kopp, formerly with Hanlon-Waters, Inc., to become division manager for Maloney for North and West Texas with headquarters at Fort Worth; Dugan Blakeney, Hanlon-Waters representative at Odessa, Texas, goes with Maloney at the same place. Others in the Odessa headquarters include R. H. Guthrie, H. H. Guthrie and Frank Gurtler.

D. E. Army of Houma, Louisiana, has transferred from Crawford Tank & Supply Company to Maloney. C. E. Henderson similarly transfers from Crawford to Maloney at Lake Charles, Louisiana. C. L. Pirtle, J. B. Graham and Miss Alice Wolff of Houston transfer from Crawford to Maloney.

Carl Folker, district manager for Maloney at Artesia, New Mexico, is promoted to division manager in charge of New Mexico, Wyoming and Colorado.

F. L. Bruckner, formerly of Parkersburg and Crawford, joins the sales department of Maloney at Tulsa; T. J. Costello continues with Maloney as sales representative in Oklahoma; Guy Stevenson continues as field man for Maloney at Artesia; Carl Kinser and Lester Moore, Maloney representatives at Corpus Christi for several years, remain in their same capacities.

The Maloney Tank Manufacturing Company was reorganized early this summer, the executive officers including O. W. Maloney, president; J. C. Highfell, vice president, and H. D. Crawford whose family organized the Parkersburg Rig & Reel Company, one of the earliest oil well supply houses in the world, as secretary-treasurer.

Engineering Laboratories Adds Facilities at Dallas

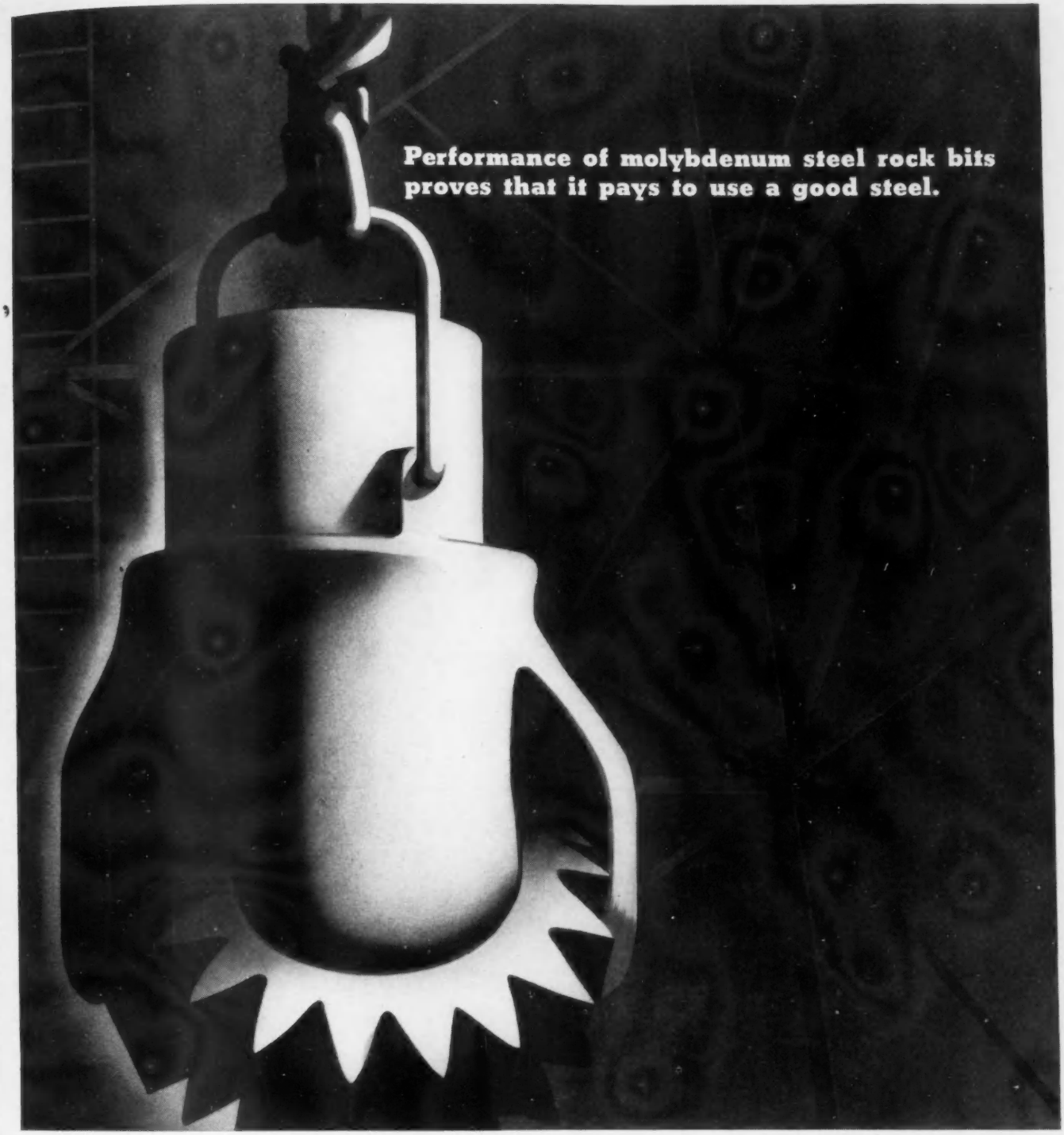
W. G. Green, president, Engineering Laboratories, Inc., Tulsa, announced that his company is building additional manufacturing facilities in the vicinity of Dallas. The Dallas plant is to provide some expansion in certain of the company's oil tool lines, as well as to handle work sub-contracted to it by Texas firms. Green was advised by some of the Texas manufacturers for whom his plant has worked during the war, that competition in civilian production would be so tight that freight rates from out-of-town plants might seriously handicap future contracts.

Green announced that Engineering Laboratories is also expanding the facilities of the Tulsa plant. While removal of the Tulsa plant is not indicated at any time in the future, Green pointed out that competition from other manufacturers, notably in Houston and Los Angeles, might require future expansion into those areas.

Calco Chemical Is Erecting Research, Service Center

Ground has been broken for the first units of the new research and technical sales service center of the Calco Chemical division of American Cyanamid Company, S. C. Moody, general manager, has announced.

The center, located at Bound Brook, New Jersey, will also include the general administration offices of the company.



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BETTER
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OIL WELL EQUIPMENT

August Production Set At 4,870,000 Barrels

Crude production in August averaged 4,870,000 barrels daily, 21,000 barrels below the July record, with increased production in Oklahoma and a new high output in Louisiana failing to offset heavy declines in California and the Texas Gulf Coast, it was reported last week by the Bureau of Mines.

Daily average demand for domestic crude during the month was 4,924,600 barrels, 49,100 barrels below July, necessitating withdrawals from stocks at an average of 54,800 barrels daily. Total stocks of crude, domestic and foreign, dropped from 221,431,000 to 219,956,000 barrels during the month.

The bureau reported that crude runs to stills averaged 4,928,000 barrels daily, a decline of 73,000 barrels from July. Total demand for military and civilian grades of motor fuel was 73,000,000 barrels, a gain of 9.1 percent over August, 1944, but stocks of civilian grade motor gasoline increased from 46,611,000 to 48,288,000 barrels during the month.

The monthly "balance sheet" showed domestic crude production totaling 150,965,000 barrels in August against 151,606,000 barrels in July; natural gasoline, 9,411,000 barrels against 9,517,000 barrels, and benzol, 240,000 barrels, unchanged, a total of 160,616,000 barrels against 161,363,000 barrels. Imports included 7,230,000 barrels of crude against 7,601,000 barrels, and 2,409,000 barrels of refined products against 2,392,000 barrels, giving a total new supply, all oils, of 170,255,000 barrels against 171,356,000 barrels.

Exports were 3,308,000 barrels of crude against 3,533,000 barrels in July, and 7,506,000 barrels of refined products against 13,080,000 barrels, and domestic demand included: 70,027,000 barrels of motor fuel against 66,218,000 barrels; 3,789,000 barrels of kerosine against 4,402,000 barrels; 14,998,000 barrels of distillate fuel oil against 15,353,000 barrels; 40,350,000 barrels of residual fuel oil against 41,434,000 barrels; 3,120,000 barrels of lubricating oil against 3,261,000 barrels; 214,000 barrels of wax against 203,000 barrels; 769,000 barrels of coke against 828,000 barrels; 7,957,000 barrels of asphalt against 4,896,000 barrels; 387,000 barrels of road oil against 253,000 barrels; 9,069,000 barrels of still gas against 9,638,000 barrels; 2,645,000 barrels of miscellaneous products against 2,963,000 barrels, and 1,934,000 barrels in losses against 1,309,000 barrels.

Stocks at the close of the month included: 215,135,000 barrels of gasoline-bearing oil against 216,638,000 barrels July 31; 4,821,000 barrels of heavy oil in California against 4,793,000 barrels; 4,048,000 barrels of natural gasoline against 4,338,000 barrels, and 236,337,000 barrels of refined products against 227,390,000 barrels; a total of 460,341,000 barrels, all oils, against 453,159,000 barrels, or 88 days' supply against 84 days'.

The Bureau of Labor Statistics price index for crude and products was 64.2 for August, unchanged from July, compared with 63.9 for August, 1944. The crude capacity represented in the report was 5,112,000 barrels, indicating an operating ratio of 96 percent compared with 95 percent in the same month last year.

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Monthly International Section

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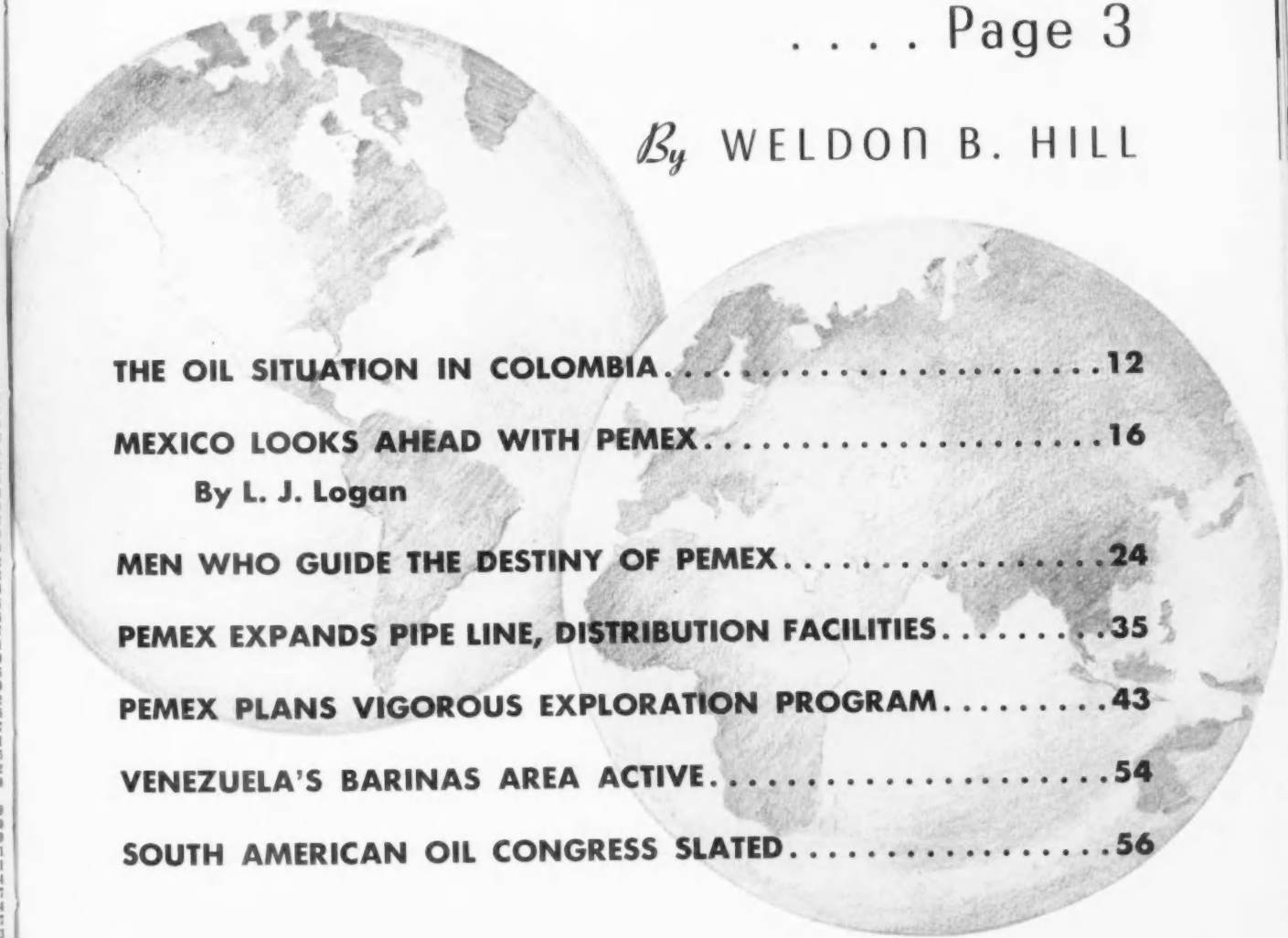

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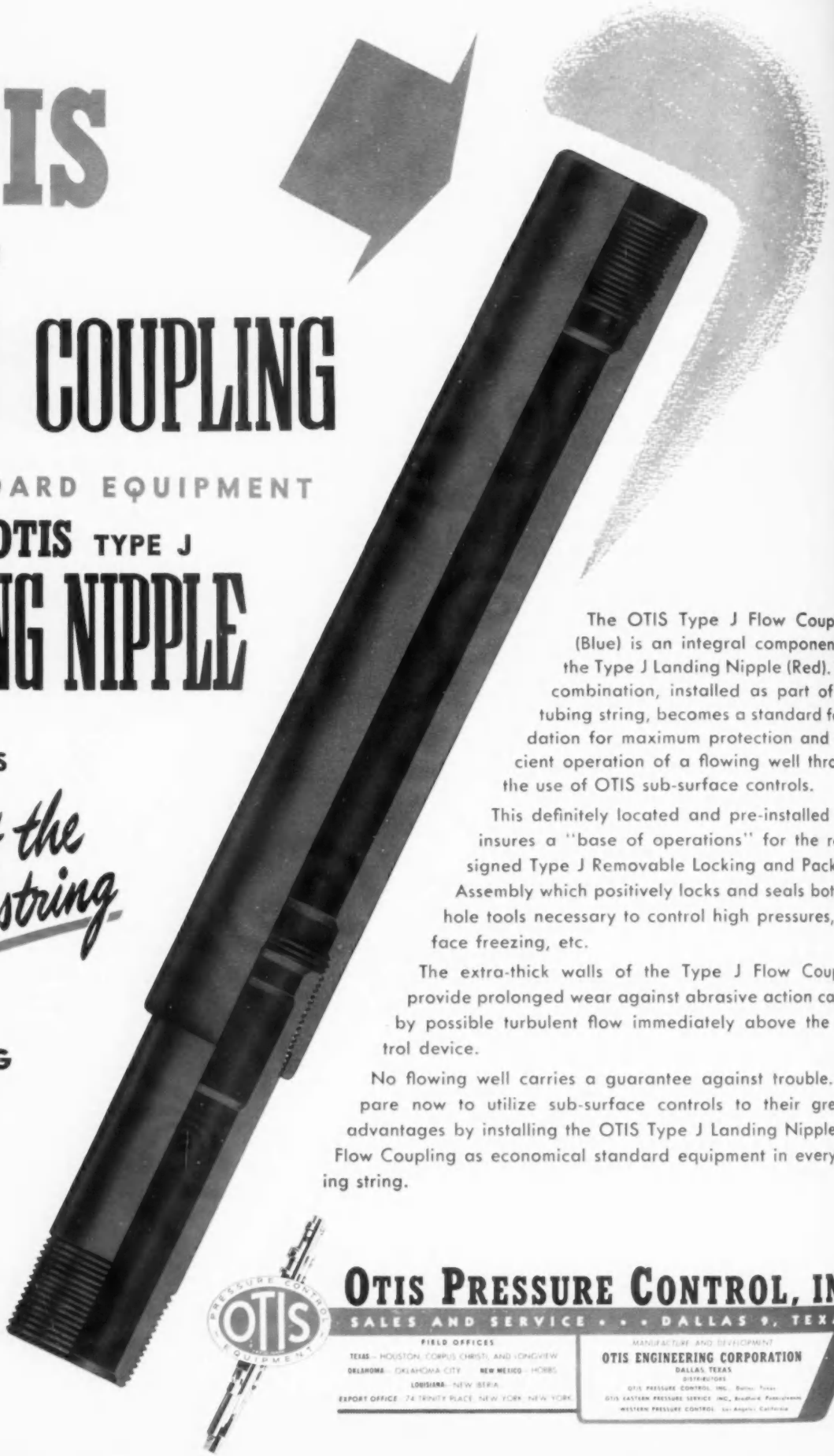

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Russia Expands

By WELDON B. HILL, Staff Writer

Derricks stretch far out into the Caspian Sea. —Sovfoto.

RUSSIA'S extensive war rehabilitation and industrial expansion program calls for increased production and utilization of both crude oil and natural gas.

The Soviet Union's new five-year plan covering the years 1946 to 1950 schedules the development of an industrial empire far greater than that of prewar, and apparently its basic energy is to be petroleum. This means Russia's production of crude oil and natural gas will be expanded materially and available for use. Not only will Russia use her own resources of petroleum, but she also will take some in Poland and Roumania.

Lines Being Laid

At the moment the utilization of natural gas is undergoing the most extensive expansion. Already several important gas pipe lines have been laid, others are under construction and others under consideration.

Russia apparently is entering a period similar to that experienced by the United States following World War I when industrial expansion was powered through use of crude oil and natural gas. At that time, there was a sharp trend toward conversion from coal to petroleum as the principal source of power. The war just ended has not only been an oil was but it has speeded the development of uses for natural gas, and apparently Russia will step up its use of natural gas.

Oil is foundation of mighty new empire envisioned by Soviet Union's 5-year plan

The discovery of natural gas is not new in Russia. It has been produced for generations in Baku and other areas in the Caucasus. However, it was only recently that this natural resource received much attention in the industrial sector of Central Russia.

The importance that natural gas will play in the reconstruction period was foreseen by Russian leaders in 1941 when it was forbidden to complete a new oil well without making provisions for recovering the natural gas released. This indicates that Russia may be well ahead of the United States in making full utilization of her natural gas. This program for Russian oil fields called for the construction of plants to recover gasoline and other products from natural gas. These plants will be increased as Russia pushes her gas conservation program.

To make the natural gas available for the big steel and manufacturing centers, Russia is to supplement her transportation system with the construction of thousands of miles of trunk lines and

Expansion of its existing pipe line facilities was one of the Soviet Union's first postwar projects under a new five-year plan. The map shows new pipe lines, prewar carriers, oil fields, gas fields and refineries of European Russia.

gathering systems. This construction was started during the German invasion and was well under way at the close of the war. Additional new pipe line projects are expected to be placed in operation before Russia's new five-year plan has been completed.

Probably the most important of Russia's new natural gas line projects is the 500-mile, 10 and 12-inch carrier being constructed from the Saratov gas district to Moscow for industrial and domestic needs. The line will have a capacity of 80 million cubic feet daily.

The line from this Volga River gas producing sector will be equipped with 24 American compressors, each a 1000-horsepower unit. The compressors will be installed in six booster stations along the pipe line, each to be equipped with four of the American-made units. The line will be capable of handling a pressure of about 800 pounds per square inch, which puts it in the category of a high-pressure line.

The new line will furnish Moscow about five times the amount of gas produced by the Moscow gas plant. In utilizing natural gas for heat and power at industrial and domestic outlets in Moscow, the Russian government will be making available thousands of workers who toiled in producing coal and wood. It also will release hundreds of railroad cars which have been used in transporting solid fuel. These factors are of great importance to Russia in her rehabilitation period.

400-Mile Line Laid

A 400-mile pipe line is reported to have been completed recently to supply the steel plants of Sverdlovsk with gas from the new and important field at Cherdin, near Bereznovi, at the northernmost bend of the Kama River. Sverdlovsk, because of its enormous steel output, is called the "Pittsburgh of Russia."

When the German armies were closing in on Stalingrad in 1942, a line was laid from Yelshanka to Saratov to enlarge the gas supply of the latter city. Old lines were relaid and pumping equipment was made from old metal but the line produced a sharp increase in Saratov war production.

Scheduled for completion near the first of 1946 is another "big-inch" gas line in the Ukraine. This project is a 450-mile carrier from the Daszawa field of Poland in the sub-Carpathians to Kiev. The line will furnish fuel for industrial plants at Kiev, Vinnitsa and Proskurov. Similar projects are forecast for other Ukraine cities, probably Kharkov. Some gas has been discovered in the Ukraine, and efforts to find more undoubtedly will be made.

Kuibyshev, seat of the Russia government at one time during the war, is now served by one natural gas line built in 1943 from Buguruslan and today more than 150 plants in Kuibyshev and Chkalov provinces are being furnished with fuel by this carrier.

The 125-mile line now is being supplemented by a second 10-inch line from Burguruslan. It is reported that the first Kuibyshev-Buguruslan carrier handles 6 million cubic feet of gas per day. Gas production of the Buguruslan field exceeds 50 million cubic feet daily, according to Russian sources. Oil production from this field is shipped to refineries at Ufa.

Several cities along the Caspian Sea now have natural gas available, being supplied from nearby fields in the Baku, Dagestan and Grozny districts.

Moscow announced on January 4, 1945, that the first natural gas pipe line in Central Asia had been completed. A

Well No. 8 of the Palvan-Tash fields in the Fergana Valley, Central Asia. —Sovfoto.

Producing oil in Fergana Valley, Central Asia. These men are members of a drilling crew considered one of the best in the Palvan-Tash fields. —Sovfoto.

—Sovfoto.

Construction of a 500-mile system of 16 and 18-inch gas line from Saratov in the Ural Mountains to Moscow has begun and by the end of the year Moscow will receive gas from huge deposits in the vicinity of Yelshansk near Saratov.

new gas system has been put into operation, connecting Andizhan with nearby oil and gas fields.

Exploration has established several rich new gas pools in the vast territory of the Soviet Union. An important gas strike has been made near Morshansk in the Moscow Basin almost midway along the new Saratov-Moscow pipe line. Other new reserves are in the Pechora River Basin, Western Urals, Penza region, the Kalmyk steppes, northern Caucasus, the Saratov-Volga districts, Kuban and the Crimea. The Russian government plans to utilize these valuable resources in speeding its industrial growth in the next five years.

Crude Oil

Meantime, a petroleum exploration campaign is now in full swing, on a scale rivalling the intensive wartime search for new fields in the United States.

With her exports of oil completely wiped out during the war, Russia's drive for new oil production may place the Soviet Union in a position to export large quantities of oil. Russia will need some raw materials as a medium of foreign exchange during her reconstruction period and petroleum could play an important role in her world trade.

With much new reserves coming under Soviet control through the acquisition of parts of Poland, Roumania, and the Baltic states, together with the increased production from development of her own reserves, Russia may have oil for export trade within the next few years. The only reason for holding back Russia's export volume of petroleum will be her own increased consumption.

Russia is definitely entering an industrial and machine age of her own and a large proportion of Soviet oil production will be reserved for domestic consumption. The Soviet government pledged last July that millions of Russian civilians soon would have automobiles for private use and this pledge has been followed by a sharp increase in the output of motor cars. The increased use of automobiles by civilians as well as the Red Army will consume much of Russia's gasoline output.

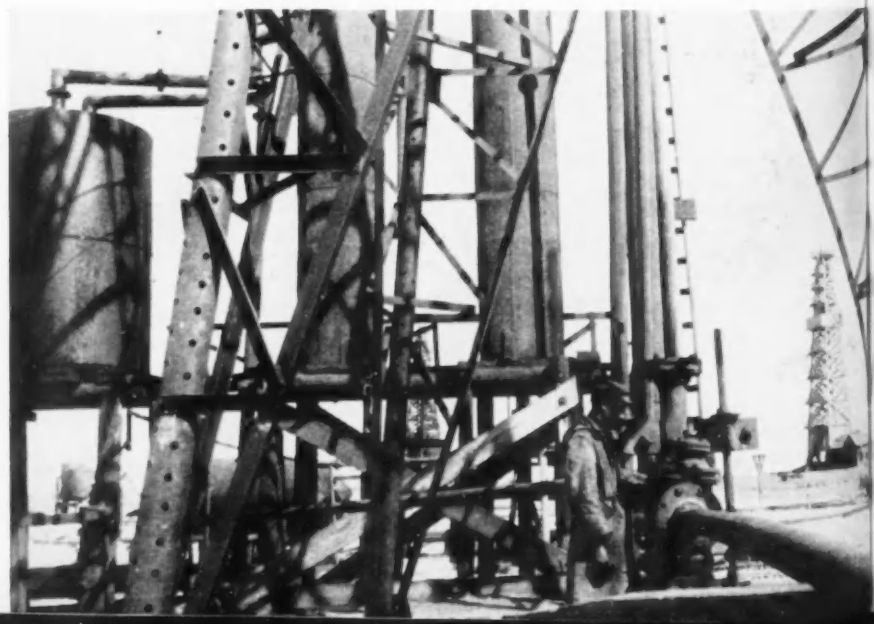
Work is already under way on a pipe line from the Ploesti area in Roumania to the Russian port of Odessa, a distance of 250 miles. Much of the pipe for this project has been secured by taking up the ten-inch line the Germans laid between Ploesti and Orsova, on the Danube. Another line will be put in from the Bacau producing area to Odessa.

More than 2000 geologists and geophysicists, fresh products of Russia's new petroleum institutes, are now in the field on a year 'round basis, subjecting old producing areas and virgin territory alike to the scrutiny of theoretical and applied science as it deals with petroleum accumulation.

The immediate objective of Russia's oil industry is to map promising structures and furnish better guidance for extension drilling and deep testing, so that undeveloped reserves definitely can be proved and await commercial development when necessary supplies, equip-

New derricks in the South Iskine field of the Emba fields. This region is one of the largest in the Soviet Union, covering 100,000 square kilometers and estimated to contain 1 billion tons of oil.

—Sov



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Oil barges on the Volga.

—Sovfoto.

ment and trained workers become available.

Workers are now being trained and the Russian Purchasing Commission is taking up where lend-lease left off in buying American-made oil field equipment. Russia is expected to be one of the best foreign sources for the shipment of oil field equipment during the next 12 months.

The end of the war finds Russia's petroleum industry established on a much broader base of scientific and engineering control than was the case five years ago, when the fields along the Caucasus trend from Maikop to Baku represented practically all the Soviet sources of supply and had to be desperately defended. The new fields discovered and developed during the war in the Ural-Volga region are rapidly approaching predominant rank in the Soviet economy.

Until mid-1944, deevlopment of the numerous new fields in the Ural-Volga area was confined to the tapping of Upper Paleozoic pays encountered from 1000 to more than 3000 feet. At least ten fields of major size had been opened and under development in the Kuibyshev Combine area up to July, 1944; and, in addition, four promising fields were in process of development along the Kama River valley, within the Molotov Combine area to the north. These do not include the important new gas fields near Saratov and Bereznovi. In the far northern Pechora basin, close to the Arctic Circle, the Russians reported two important field discoveries in 1942 and 1943, but aside from their locations, at Ust Uchta and Izhma, very little is known about them outside of Russia. They are undoubtedly Paleozoic strikes, however, since the Paleozoic trough west of the Urals continues into the Arctic region.

At the beginning of the war, when serious drilling was just beginning in the Ural-Volga area, the production of the entire region did not exceed 45,000 barrels per day. By the end of 1943 it had reached more than 170,000 barrels daily, and was well over 225,000 barrels at the beginning of the current year. Thus, in the space of only five or six years this new producing area has attained an output rating of approximately half the current potential of the prolific Baku area. Its postwar possibilities are enormous, and spectacular developments there within the next two or three years should surprise no one.

First Oil In Devonian

One such surprise is already a year old. In late August of 1944 a deep wildcat was completed at a reported depth of 9600 feet in the previously shallow Tuimazy field west of Ufa, spouting oil over the derrick top for more than a week before it was brought under control. It was later confirmed that the pay tapped was a very porous Devonian limestone. No pay older than Carboniferous had ever before been found in Russia.

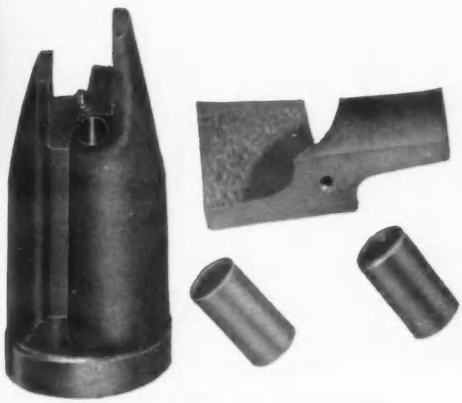
Inspired by this first Devonian strike, Russian authorities decided to put down a stratigraphic test well at a proposed wildcat location within the Samara Bend of the Volga, midway between Syzran and Kuibyshev, on a geological and geophysical high that had been mapped about ten miles south of production in the Yablanovog Ovrag field. What is believed to be the same Devonian pay section also was encountered in the latter venture, at a depth reported to be about 8500 feet. This well likewise came in wild, justifying the opinion that important Devonian production will eventually be found over a wide area west of the Urals. Furthermore, since this petroliferous Devonian section has not been recognized in outcrop in the central Urals, it is entirely possible that it wedges out into typical Devonian shale eastward, suggesting "stratigraphic" trap possibilities that must be obvious to many Russian geologists.

Deep testing of known producing structures in the general area is now in progress, but results during 1945 have not been reported, as far as the Kuibyshev Combine region is concerned. The Molotov Combine, however, reported a successful Devonian completion in a field near Molotov during May, 1945, making at least three widely separated

Oil train leaving Baku, principal oil producing center of the Caucasus.

—Sovfoto.

HUNT *Export Model* WELDED-IN BLADE BIT



2-way head (note locating pin) 2-way blade (note locating hole) and special alloy slush nozzles.

Blade set in position, ready to weld.

Finished 2-way bit, ready to run.

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3-way head and blade unassembled, set in position to weld, and finished bit. Since 3-way blade cannot be moved laterally the locating pin and hole are not necessary.

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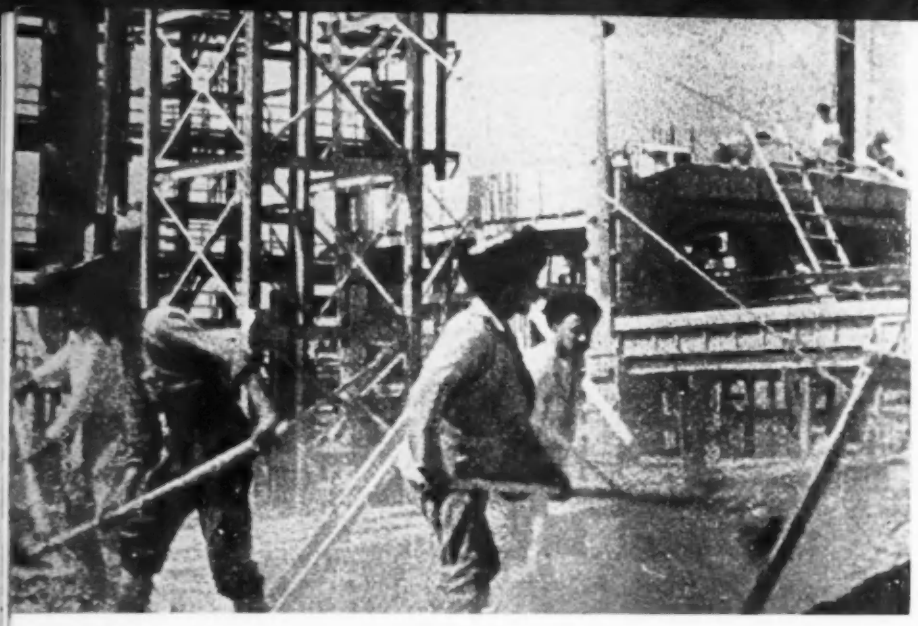

—Sovfoto.

A new refinery, designed and rushed to completion during the war at Nebit-Dag, Turkmenia's rich oil district south of Krasnovodsk and across the Caspian Sea from Baku, was one of the important factors in the rapid growth and mechanization of the oil industry of Soviet Central Asia. The plant processes petroleum from the local wells, which doubled in number during the war, and from other Central Asian producers.

Exploitation of the Nebit-Dag field began little more than five years ago, as one of the projects of the Third Five-Year Plan, but was speeded up during the war as the German invaders engulfed or threatened the major oil fields of the North Caucasus and Baku. Largely as a result of wartime expansion, Turkmenia's petroleum production is now estimated to be more than six times the prerevolutionary output. The Turkmenian state budget was increased by more than a third in 1944 to expand the production and processing of petroleum.

While Nebit-Dag, which means Petroleum Mountain, is the principal Turkmenian producer, prospectors recently discovered other rich sources of oil in Turkmenia. Oil beds have been found in salt marshes and the vast Kara Kum Desert, which covers much of this Central Asian republic.

spots of proved Devonian production across the wide expanse of the east Russian plain.

Largest New Field

Of the seven definitely known new fields in Bashkiria, the largest in proved acreage is that at Buguruslan (12,000 acres), although the most important producing field is at Kinzebulatovo, near Ishimbai, opened in late 1943, and now producing about 30,000 barrels per day. It is probable that this single field is yielding a third of all the current output of Bashkiria, unless enough new Devonian wells have been completed at Tuimazy within the past six or eight months to alter this situation.

In the Baku area, 65 years of continuous producing activities have culminated in an energetic campaign to extend production offshore from the Apsheron Peninsula to deepwater limits. Successful completions have been made within the last two years as much as 4½ miles out in the Caspian Sea. Seismograph surveys have confirmed the existence of three parallel closure trends at right angles to the axis of the peninsula, two of them lying completely offshore. The inner trend lines up with the Kura River field below Baku. This indicates that several fields ultimately may be opened and developed along this single trend. Drilling is proceeding with that objective in view. Successful results will lead to equally intensive testing of the paralliel structures farther eastward.

New Drilling Method

Russian engineers have developed a new drilling method to overcome the previously discouraging difficulties attending offshore operations in the extremely rough waters of the Caspian. It involves setting piles at each multiple hole location and then sinking a drilling barge to the piling tops. Special fittings enable divers to lash the barge securely to the piles and to level up the assembly. Altogether, 34 holes are reported to have been drilled with this type of equipment, up to the end of last May, and about 300 more are scheduled to be put down within the next 18 months. Total area of offshore closed structures is claimed by Azerbaijan Petroleum Trust officials to be greater than the area of the Apsheron peninsula itself. In other words, the future of the Baku area lies at the bottom of the Caspian Sea.

As a result of detailed geophysical surveys of the Tertiary section in Daghestan, interpretations of the subsurface structure of that locality has been greatly revised since 1943 and a number of previously unsuspected structures have been outlined. The first of these to be tested has opened a new field near Makhach-Kala, capital of Daghestan, and the whole area is scheduled for thorough re-exploration by the drill, along the coastal stretch between the Baku and Grozny regions.

Asiatic Activities

In Asiatic Russia, recent and current exploration and development activity has been widespread, but has been concentrated praticularly in the Uzbek and Kirghi provinces of Turkestan, close to the borders of Afghanistan, India and China. The region is adequately served by railroad lines connecting with the Caspian Sea and the industrial centers of the Ural region. Deep drilling has opened up excellent new pays in several of the older fields south and southeast of Samarkand, while important new fields have been discovered in the Fergana Valley area east of Tashkent.

Intensive exploration and some drilling also were being carried on in central Asia, in the Kazakh Republic, Yakutsk area and the Kamchatka Peninsula. Results have not been announced.

The postwar period undoubtedly will see more attention given the Emba region, north of the Caspian Sea. While there are seven or eight good producing fields there is salt dome structures, drilling was curtailed during the war because of the region's high dry-hole ratio and the need for equipment in more promising areas to the north.

Russian reports say Soviet oil production has increased steadily, especially in the oil fields of the Kuibyshev-Neft area, in Central Asia, in the Far East, and in Bashkiria. These reports say the Kuibyshev-Neft combine produced 400 percent more oil in 1944 than in 1940.

New methods of secondary recovery have been introduced with success in some Russian fields. Both gas and water are being used to increase the yield of such fields as Krasnokamsk, Krasnodar, Kazakhstan and Grozny.

With the country needing more oil than ever before during its reconstruction period, drilling in the next 12 months will be twice as much as in the past year, when it was at a a peak. Particular attention will be paid to wildcats. This will call for more drilling equipment and many Russian war and ordnance plants are being converted to produce oil field equipment. However, a large amount of this equipment will come from American manufacturers.

Even with the most aggressive crude oil production program under way in Russian history, the Soviet government is embarking on a plan to produce synthetic oil. Two synthetic fuel plants now are under construction. No details are available as to the raw material to be employed or the method to be used.

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52 TESTS This bar chart compares the performance of the 52 ring constructions studied. The FLOSEAL test was terminated after 2496 hours at 300° F. and 4000 lbs. pressure because no additional extrusion or loss of pressure was noted which indicated the test could perhaps be continued for many more months—even years—without noticeable effect upon the pack-off properties of the ring assembly.

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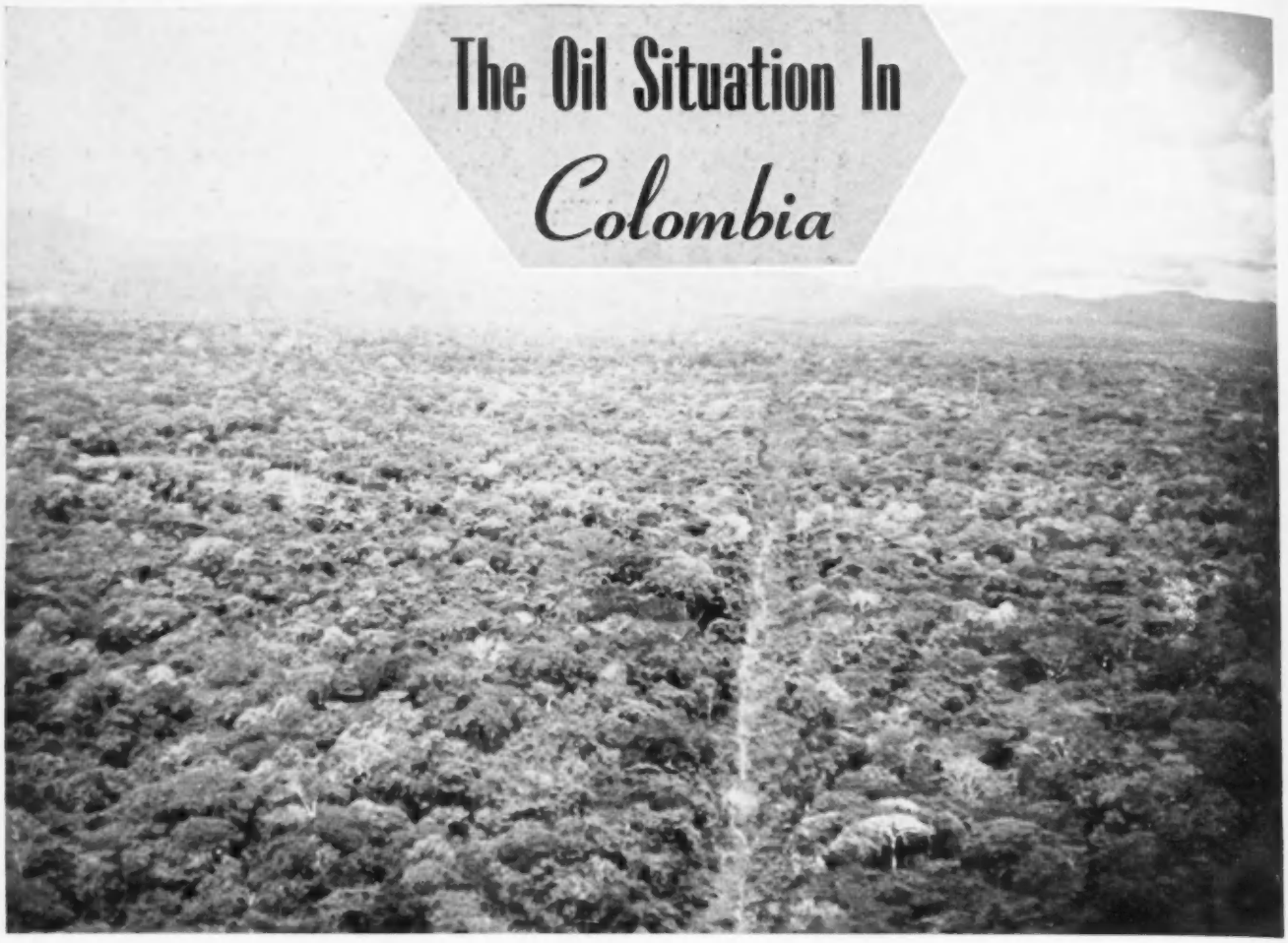
The Oil Situation In *Colombia*



South American Gulf Oil Company's pipe line through the jungle.

More operators join accelerated drilling campaign as material becomes available

RECENT months have witnessed a decided acceleration of exploratory interest in Colombia. This will be translated into more active wildcat drilling in the latter part of 1945 and throughout 1946, with several new operators entering the picture.

Geophysical work is being carried on throughout the country, with particular emphasis on the northwest and southwest sectors. Inability to secure drilling equipment and materials for delivery in Colombia during the war has greatly curtailed drilling, but the currently improving situation has brought forth announcements of drilling plans of all companies holding concessions in the country.

However, the feeling of optimism is tempered somewhat by the indecision of Colombian legislators and petroleum experts as to just what kind of oil laws finally will be passed. Operators feel the present statutes are to be preferred over any of the proposed substitutes.

In 1944, seven wildcats were completed in Colombia, but except for one gas well, completed by Shell interests in the San Angel concession to the north of the Dificil field, dry holes resulted from all ventures. By contrast, eight wildcats were completed during the first half of 1945, although no new field discoveries were made, and six others were in progress at the end of July. In addition, at least four were scheduled to be spudded before the fall of 1945.

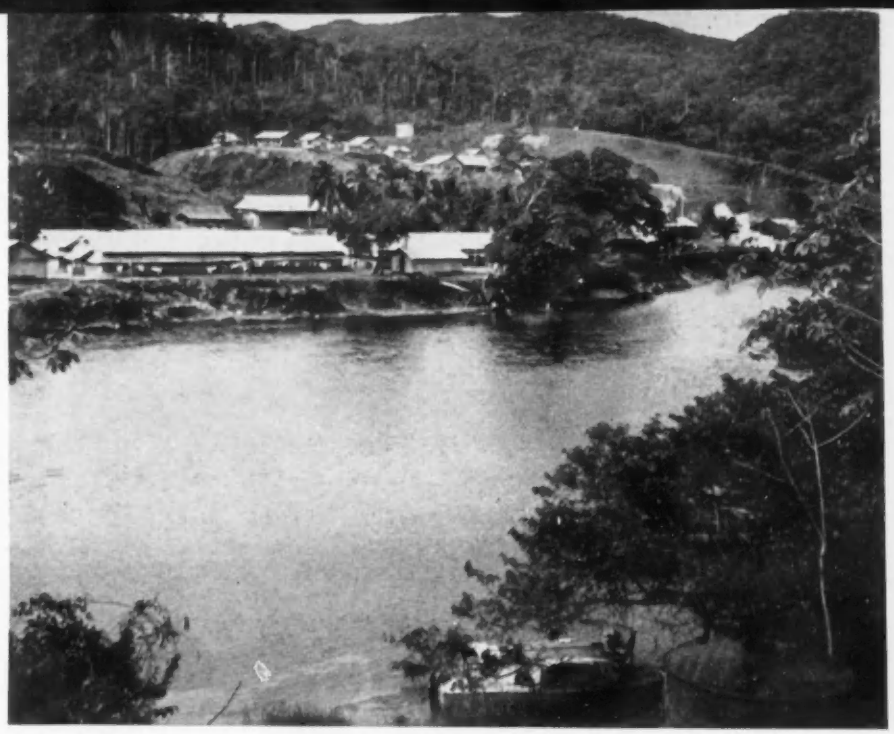
From the standpoint of both wildcatting and field development activities, Royal Dutch Shell subsidiaries have been perhaps the most active in Colombia during the past year, with drilling going on continuously in three different areas. The San Martin 1 failure in the western Llanos near Bogota was followed immediately by the spudding of San Martin 2. In the far north, southeast of Barranquilla, Shell has continued to put down holes in all directions from the Dificil discovery. Six wildcats have been drilled by the company within 18 months in the San Angel and Doce concessions, adjoining the Dificil tract north and south. Six wells have been completed in the Dificil property, for a score of two shutin oil wells and a gas-distillate well. Two more Dificil stepouts were starting in August. Shell has been making a better showing in development of the Casabe field, on the Yondo concession which had 30 producing wells at the end of August, and 38 locations staked for systematic development attention. A ten-kilometer feeder line was installed from the field to the Andian pipe line across the Magdalena River, and oil started flowing through from Casabe storage on June 6 at the average rate for June of 8500 barrels daily. Excess capacity of the

Andian line is estimated at 15,000 barrels, which may mean that Shell will try to put in a new pipe line to the coast to handle Casabe oil if and when the field develops sufficient proved potential. Recent developments in the field indicate it may have to go on the pump sooner than anticipated, with consequent delay in building up to full potential output.

On the east bank of the Magdalena, opposite the Casabe field, Tropical Oil Company has completed Galan 1 wildcat to extend production on the same trend across into the De Mares concession, where its two producing fields of Infantas and La Cira are located. Galan 1 made initial production of 1200 barrels daily but is now shut in for pipe line connections. Other exploratory wells are in prospect within the huge De Mares holding, since the two operating fields are almost completely drilled up. Infantas, the original field, south of La Cira, is completely developed, with some operations still in progress at La Cira, the northern portion of El Centro field. The discovery of Galan poses a problem for Tropical since a recent decision of the Colombian supreme court grants title to De Mares concession for only five more year. This is little enough time in which to exploit a field of any sizeable proportions.

Floresanto Wildcat

The Tropical and Socony-Vacuum companies are jointly drilling the Floresanto wildcat in northwestern Bolivar, between the Sinu River and the Caribbean coast. This operation has been in progress since early 1944, with many halts for fishing jobs, materials, repairs and lack of fuel. It is hoped that materials will now become available for continuous operation.



Rio de Oro Camp, Colombian Petroleum Company, pictured from the Venezuela side of the Rio de Oro. The abandoned tank in the foreground was left by Shell after an unsuccessful exploration.

Richmond Petroleum Corporation surrendered its Retiro concession, at the south end of the Dificil trend, after drilling two dry wildcats on structure, and shifted drilling interest to the La Dorada fee tract on the west side of the Magdalena, southeast of Medellin. To the end of June, this company had drilled four dry holes on the latter property, but planned to continue test drilling for the remainder of 1945, probably to the extent of at least four more holes. The same company was completing preparations to spud its first wildcat test in the Caraballo tract on or about August 1, 1945, about 65 kilometers southeast of Barranquilla. It holds two other concessions nearby, on which drilling commitments apply, and may start wells there in the next year or so. Richmand has been one of the most active operators in Colombia, having drilled more wildcats than any other company, but has yet to find production. Richmond and Texas interests are joining for a test before the end of 1945 in the Pinto concession, 50 kilometers southwest of the Dificil field. Richmond holds five concessions in a single large block on the east side of the Magdalena River and just south of the Barco pipe line route. Indications are that this property will get some drilling attention in 1946, because it is traversed in part by the Andian pipe line and is within 12 kilometers of the Barco line, operated by South American Gulf Oil Company.

Five additional Richmond concessions, in the Llanos of Boyaca and Meta, and one in western Cauca near the Pacific coast, apparently are scheduled for geological and geophysical exploration only during the next year.

Colombia Petroleum Company well, Petrolea field.

Gulf's Plans

Gulf interests are planning immediate wildcat testing of two adjacent concessions lying along the west side of the Magdalena from the Casabe concession line on upstream for more than 35 kilometers. This company likewise is expected to do some 1946 drilling on one

Lease tanks and separators, Petrolea.

or more of its three concessions in central Magdalena.

The Texas Company, through subsidiaries, is planning at least three Colombia wildcats within the next year, two of them being held up now only because of lack of equipment. Also, the company's operations have had to await satisfaction of title requirements for several years. One will be put down on fee land in extreme western Boyaca, close to the east bank of the Magdalena River. Camp and location are prepared. At least one other will be drilled in the vicinity of Barranquilla, where the company holds three concession properties in and south of the Salamanca Bay area. It is probable, too, that Texas will do some drilling in the near future within its almost solid line of 11 concessions on both sides of the Lower Magdalena in Magdalena and Bolivar departments.

Reports are that Texas will "do a lot of work" in the Putumayo and Caqueta, near the Ecuador border, during 1945 and 1946. The company has at least one large concession there, crossed by the Caqueta River. It also holds two concessions in the foothills area east of Bogota, and may have to do some drilling there soon in order to retain concession rights.

Barco Developments

In the Barco area, development of the Socuavo dome field is going forward systematically, with about one completion per month. No wildcatting is expected in the immediate future, but development of a deep Cretaceous pay may be in the offing for the whole Tibu area, north of the drilled-up Petrolea field, depending upon the outcome of Tres Bocas 4, deep test now under way on the Tres Bocas dome. A change in the pipe line system to handle Tibu production probably will be an immediate project for the Barco, since the Tibu fields now are served only by a six-inch line terminating at Petrolea. Present plans are to move the main pump station to Tibu, making that the origin of the 12-inch main line, and reverse the present six-inch feeder to bring Petrolae crude to Tibu. Socony-Vacuum (Cia. de Petroleos del Valle del Magdalena) has developed moderately commercial production in its Cantagallo tract west of Puerto Wilches. The field has three oil wells and three dry holes, and a seventh well is in progress. An adjoining concession on the east side of the river is held by the same company, and the field may be extended in that direction during 1946 and 1947. None of the Cantagallo wells have been put on production so far, except to supply fuel for other drilling operations.

Floresanto Watched

The possibility of other Socony-Vacuum wildcat operations in Colombia in the near future no doubt will depend on the outcome of the Floresanto venture and Richmond's test in the Caraballo tract. Socony has concessions adjoining both the Floresanto and Caraballo tracts.

Tropical Oil Company is believed to be all set to begin drilling soon on some of its eight concessions in Magdalena and Atlantico, and is known to have contract commitments on several concessions in the Llanos area, where it holds a nearly solid block of tracts, numbering 21, running from the Venezuelan boundary southwest almost to Bogota. As a matter of fact, all five companies having holdings in the Llanos, are expected to begin moving new equipment into the area in 1946 and thereafter. These companies include Tropical, Texas, Socony-Vacuum, Shell and Richmond. Operational problems in this area are tremendous, due principally to transportation problems, and discovery of commercial production would give the companies an immediate problem which thus far has defied solution, even in theory.

Phillips Active

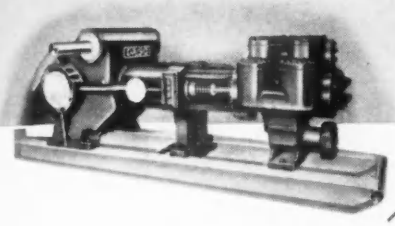
Phillips Petroleum Company of Colombia, although newly formed, is rapidly acquiring concessions and fee property in the country, and shortly will announce exploration and drilling plans.

The Tri-Pet Corporation, jointly owned by the Sinclair, Cities Service and Richfield companies, recently has formed a Colombian company and has filed for seven concessions in Colombia, aggregating 760,000 acres. It is also acquiring scattered fee lands of considerable area. The objective of this firm is to establish and operate producing properties in Colombia at the earliest possible date, which will depend upon the time required for verification of titles.

Headquarters building, Petrolea.

GASO SUCCESS IS BUILT ON THESE PRINCIPLES

EVERY GASO PUMP MUST BE BUILT HEAVIER AND STRONGER THAN IS NECESSARY FOR ITS SPECIFIC JOB



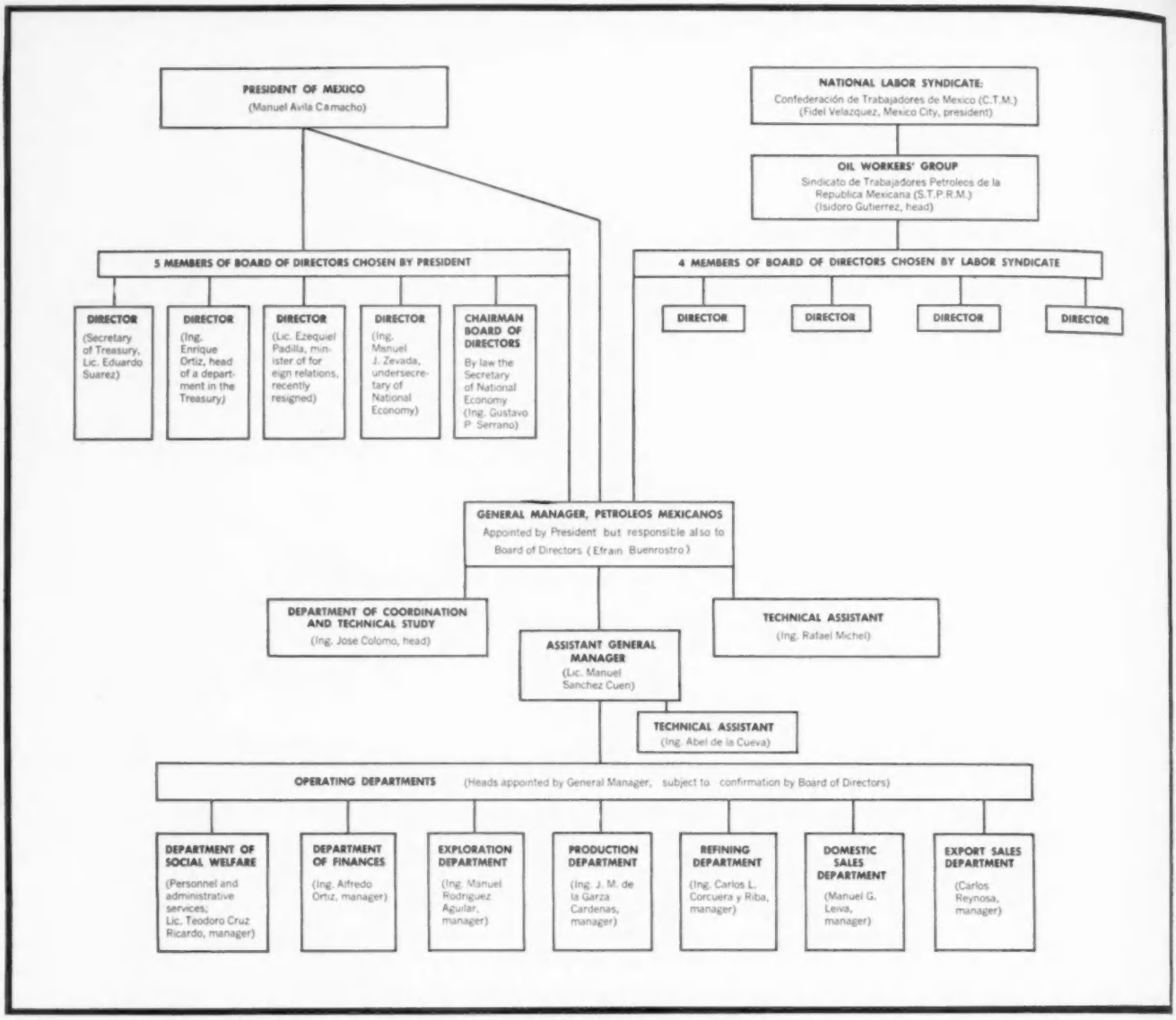
The first principle of Gaso design is the elimination of needless working parts. The second is to make every part heavier and stronger than is necessary for its specific job.

This policy offers two advantages which, as much as any other factor, explain Gaso's leadership in the field of oil industry pumps: (1) excess strength enables Gasos to operate at peak capacity for long periods without undue wear of parts; and (2) the reserve of durability built into every Gaso Pump adds years to its service life.

It's engineering that lifted Gaso from obscurity to supremacy in the pre-war years. It's engineering that led to the selection of Gasos for one of the most critical wartime pumping assignments. And it's engineering, coupled with unceasing research, that assures the continuance of Gaso leadership in the years ahead. . . Gaso Pump & Burner Mfg. Co., 902 East First Street, Tulsa, Oklahoma. Export Office: 149 Broadway, New York. Shreveport: W. L. Somner Co., 419 Lake Street. Los Angeles: Production Equipment Co., 651-653 E. Gage Ave.

GASO PUMPS

for every oil industry need


PRESIDENT OF MEXICO
(Manuel Avila Camacho)
NATIONAL LABOR SYNDICATE:
Confederación de Trabajadores de Mexico (C.T.M.)
(Fidel Velazquez, Mexico City, president)
OIL WORKERS' GROUP
Sindicato de Trabajadores Petroleos de la Republica Mexicana (S.T.P.R.M.)
(Isidoro Gutierrez, head)
5 MEMBERS OF BOARD OF DIRECTORS CHOSEN BY PRESIDENT
4 MEMBERS OF BOARD OF DIRECTORS CHOSEN BY LABOR SYNDICATE
DIRECTOR (Secretary of Treasury, Lic. Eduardo Suarez)
DIRECTOR (Ing. Enrique Ortiz, head of a department in the Treasury)
DIRECTOR (Lic. Ezequiel Padilla, minister of foreign relations, recently resigned)
DIRECTOR (Ing. Manuel J. Zevada, undersecretary of National Economy)
CHAIRMAN BOARD OF DIRECTORS By law the Secretary of National Economy (Ing. Gustavo P. Serrano)
DIRECTOR
DIRECTOR
DIRECTOR
DIRECTOR
GENERAL MANAGER, PETROLEOS MEXICANOS
Appointed by President but responsible also to Board of Directors (Efrain Buenrostro)
DEPARTMENT OF COORDINATION AND TECHNICAL STUDY
(Ing. Jose Colomo, head)
ASSISTANT GENERAL MANAGER
(Lic. Manuel Sanchez Cuen)
TECHNICAL ASSISTANT
(Ing. Rafael Michel)
TECHNICAL ASSISTANT
(Ing. Abel de la Cueva)
OPERATING DEPARTMENTS (Heads appointed by General Manager, subject to confirmation by Board of Directors)
DEPARTMENT OF SOCIAL WELFARE (Personnel and administrative services; Lic. Teodoro Cruz Ricardo, manager)
DEPARTMENT OF FINANCES (Ing. Alfredo Ortiz, manager)
EXPLORATION DEPARTMENT (Ing. Manuel Rodriguez Aguilar, manager)
PRODUCTION DEPARTMENT (Ing. J. M. de la Garza Cardenas, manager)
REFINING DEPARTMENT (Ing. Carlos L. Corcuera y Riba, manager)
DOMESTIC SALES DEPARTMENT (Manuel G. Leiva, manager)
EXPORT SALES DEPARTMENT (Carlos Reynosa, manager)

Setup and organization of Petroleos Mexicanos.

Mexico Looks Ahead

With

Pemex

FOLLOWING its historic action of March, 1938, expropriating most of the privately owned oil industry holdings, the Mexican government placed those properties in the hands of a government-controlled company, Petroleos Mexicanos, for further operation. Thus it has come about that Mexico's oil industry now is concentrated almost wholly in the hands of "Pemex," an integrated concern which supplies the nation with oils and which has the responsibility of continuing to do so.

A necessary first step, therefore, in understanding Mexico's oil industry of today is to understand the setup, organization, functioning, and personnel of Petroleos Mexicanos. To promote such understanding, THE OIL WEEKLY presents herewith an explanation of the organization and functioning of Pemex, together with photographs and biographical sketches of the men who manage the company's affairs.

Petroleos Mexicanos is controlled ul-

The Oil Outlook In Mexico

In recognition of important and interesting development under way and proposed in Mexico, The OIL WEEKLY has arranged for presentation in this and subsequent issues a group of articles that will give the reader comprehensive information on the situation and outlook in that republic.

L. J. Logan

Responsibility for bringing the information together was assigned to L. J. Logan, associate editor, qualified for the undertaking by a background of 18 years of writing for this publication on practically all phases of the industry. He spent several weeks in Mexico, working with officials and engineers of Petroleos Mexicanos at Mexico City and in the oil fields and wildcat areas, and with the generous help of the "Pemex" organization assembled data which will require several issues to publish.

In this issue are three articles intended to give the reader at once a broad view of current and prospective development in Mexico, as well as information on the organization and functioning of Petroleos Mexicanos, the government company in charge of development of the country's petroleum industry. These articles are based largely on information supplied by the Pemex organization.

The articles which will be published in subsequent issues are reports prepared by the exploration and production departments of Pemex, going more into detail on the current and planned activity in Mexico. One of these will deal with geological and geophysical work. One will discuss drilling and production activity. Another will give data on existing, building, and proposed pipe lines.

Detailed data on the work and plans of the refining department will appear in *Petroleum Refiner*.

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timately by the president of Mexico, whose appointees have the determining voice in its management. As in private companies, determination of policy is vested in a board of directors. The board consists of nine members, five of whom are appointed by the president and four by the labor syndicate. The chairman of the board is by law the Secretary of National Economy. Under President Manuel Avila Camacho, this chairmanship is held by Gustavo P. Serrano, engineer. The other directors chosen by the President include Eduardo Suarez, attorney, Secretary of the Treasury; Manuel J. Zevada, engineer, Under-Secretary of National Economy, long interested in Mexico's governmental oil affairs; Enrique Ortiz, head of a department in the Treasury. The remaining position of director by presidential choice was held heretofore by Ezequiel Padilla, Minister of Foreign Affairs, recently who resigned and is a candidate for president. The four labor-syndicate directors are outnumbered on the directorate by the presidential appointees but obviously wield strong power.

The No. 1 man in the direct management of Petroleos Mexicanos is the general manager, Efrain Buenrostro, appointed directly by the President, although responsible also to the nine-member board of directors. Buenrostro was chairman of the board of Pemex under President Lázaro Cárdenas and became general manager on inauguration of President Camacho in 1940. He has had extensive experience in governmental administrative affairs.

No. 2 man in the Pemex management is the assistant general manager, Manuel Sanchez Cuen, attorney, who also held various important government positions before going into his present post.

The general manager proposes the names of the various department heads to the board of directors, who elect. In conducting the business of his office, the general manager is aided directly by two special assistants. One is Jose Colomo, engineer, veteran of Mexican government oil administration affairs, who assists in coordinating the work of the various departments, being the head of "coordination and technical study." The other is Rafael Michel, engineer with extensive experience in governmental oil administration, who is technical assistant.

The assistant general manager is aided directly by a technical assistant, Abel de la Cueva, a civil and petroleum engineer, who had long service with the federal government in technical petroleum inspection and related work.

In addition, the management of Petroleos Mexicanos includes the heads of the various departments. Teodoro Cruz Ricardo, attorney, is manager of the department of social welfare, which promotes the health, education, and other welfare of workers and their families. Alfredo Ortiz, engineer, is manager of the department of finances. Manuel Rodriguez Aguilar, petroleum engineer who held responsible positions with the Royal Dutch Shell group, is manager of the exploration department. J. M. de la Garza Cádenas, engineer with a degree from the University of California, Berkeley, is manager of the production department. Carlos L. Corcuera, engineering graduate of Cambridge University, England, and a former Aguila (Shell Company) refining department technician, is manager of refineries. Manuel G. Leiva, who entered the oil industry when it was privately operated, is manager of domestic sales. Carlos Reynosa, who worked for Aguila and was sales manager for the Huasteca company, is manager of export sales for Pemex. All of the above men have offices in the main building occupied by Petroleos Mexicanos at Avenida Juarez 94, Mexico, D. F., Mexico, with exception of the exploration department manager, who is at Avenida Juarez 95, across the street, and the production and refining department men, who are at Articulo 123, No. 116, which is another building in the vicinity.

Zone Managers

In addition to the officials named above, there are two zone managers, Bernardo Fernandez E. Grajales, Tampico, manager of the Northern Zone, and Jose de la Merced Gonzalez, Coatzacoalcos, manager of the Southern Zone (Isthmus region).

In Washington, D. C., Petroleos Mexicanos is represented by Rodolfo M. Fernandez, engineer and former oil industry contractor, who also is petroleum attache of the Mexican Embassy at 2829 16th Street N. W., Washington.

In its organization and operation, Pemex does not differ materially from a private company. Out of the revenue from the petroleum products it sells, the company is charged by the government with the responsibility of covering operating costs and capital expenditures as well as paying taxes and expropriation obligations. Like companies in the United States, Pemex serves also as collector of the taxes on gasoline and other products. At the beginning of this year the government became emphatically insistent that Pemex must "stand on its own feet," and the company is making an earnest effort to do so.

Aggressive Program

Realizing that one of its fundamental responsibilities is to find new petroleum deserves, Pemex is carrying on an aggressive exploration program and has increased wildcatting, while even more geological and geophysical work and wildcat drilling are scheduled. Meanwhile, sound engineering practices are being employed in production operations, and much rehabilitation and corrective work on producing properties is planned. Refining capacity is being increased, and more construction is projected. Also, it is contemplated that distribution and marketing facilities will be expanded in line with road building and growth in consumption.

Backed By Government

Petroleos Mexicanos is carrying out its Mexico City refinery expansion with aid of a large loan from the Export-Import Bank of the U. S. government. But it also has access to short-term or

Main office building of Petroleos Mexicanos at Mexico City. (Company also has offices in two other buildings in vicinity.) The neon sign on left wing means, "Consume that which the country produces." On the right wing is: "Produza lo que el Pais Consume," meaning "Produce that which the country consumes."

long-term financing within Mexico. For short-term loans the company normally goes to the government-operated Banco de Mexico. For long-term loans to finance expansion and major capital investments, it goes to the Nacional Financiera, government lending agency set up to encourage private development of industry and resources. Under this system of government corporations and lending agencies, similar to what is found in the United States government, Petroleos Mexicanos actually is fortified financially by the backing of the government of Mexico, in which there is strong confidence among investors as well as the general public.

Operating Methods

In formulating its plans and programs and carrying them out, Petroleos Mexicanos employs business methods like those used by private companies, making estimates of expected revenue and budgeting operating expenses and capital expenditures accordingly. The company's program for each year is worked out by the general manager and his special assistants and department heads, subject to revision and approval by the board of directors. In working out the suggested program, there are joint conferences of the department heads with the general manager, at which the operations of each department are discussed; and the manager of each department is further called upon for data, reports, and recommendations. These reports embody information having a bearing upon revenue as well as prospective expenditures. They are brought together for correlation in the office of the general manager's assistant in charge of "coordination and technical study," and ultimately are the basis for each year's program. With the aid of data supplied by the sales, refining, and production departments, which point out trends in demand and any problems in actually fulfilling potential demand, the manager of finances prepares estimates of revenue of the company.

Based on these estimates of revenue and the reports and recommendations of the operating departments, the department of coordination and technical study then works out a detailed suggested program for the ensuing year, making allowances for expenditures in each department. This suggested program is examined and revised by the general manager, and is finally turned over to the board of directors for their revision and approval. The program as authorized by the directors then becomes the official program of Petroleos Mexicanos for the year.

Equipment Purchases

Purchases of equipment are handled very much the same as in any oil company. To sell drilling or production equipment, for example, to Petroleos Mexicanos, it is necessary to secure for a product the favor of men all up through the organization, from drillers, toolpushers, and field superintendents on up to the department heads and the general manager. The engineers, of course, from field engineers on up to the chief petroleum engineer, have an important voice in purchasing equipment and materials. In the other departments, purchases are similarly handled.

In carrying out the programmed operations, Pemex has made and continues to make considerable use of American engineering experience. It has on its regular payroll several specialized engineers from the United States, to handle such problems as squeeze cementing and gun-perforating, conditioning of drilling mud, acidizing, chemical analysis, and systematizing of the inventories of equipment. These U. S. engineers, meanwhile, are training native engineers who are expected ultimately to be in charge of these problems.

Labor Policy

Like U. S. oil companies that deal with labor collectively through unions, the Petroleos Mexicanos management deals with the organized workers under annual contract with the labor syndicate. Office employes are the principal group within Pemex not organized through the syndicate. The oil workers' syndicate is a unit of the national labor syndicate that embraces all industries. The national organization is called the Confederacion de Trabajadores de Mexico (Confederation of Workers of Mexico), and the head of "C.T.M." is Fidel Velazquez, Mexico City. The oil workers' unit of the national syndicate is the Sindicato de Trabajadores Petroleos de la Republica Mexicana (S.T.P.R.M.), headed by Isidoro Gutierrez, Mexico City. Aside from the obligation to conform with all the specific regulations in the labor laws of Mexico, Pemex also must abide by the numerous provisions set forth in its contract with the syndicate, such as those governing promotions, increases in pay, benefits of seniority, and percentage of a given category of workers, such as drillers that Pemex may employ as non-union men, as in the case of American drillers.

Under the restrictions that are in effect, only Mexican citizens are employed on most of the drilling crews, including the drillers, although some American drillers are employed. However, Pemex is free to use American tool pushers and superintendents, and has some on its payroll.

Confidential Employes

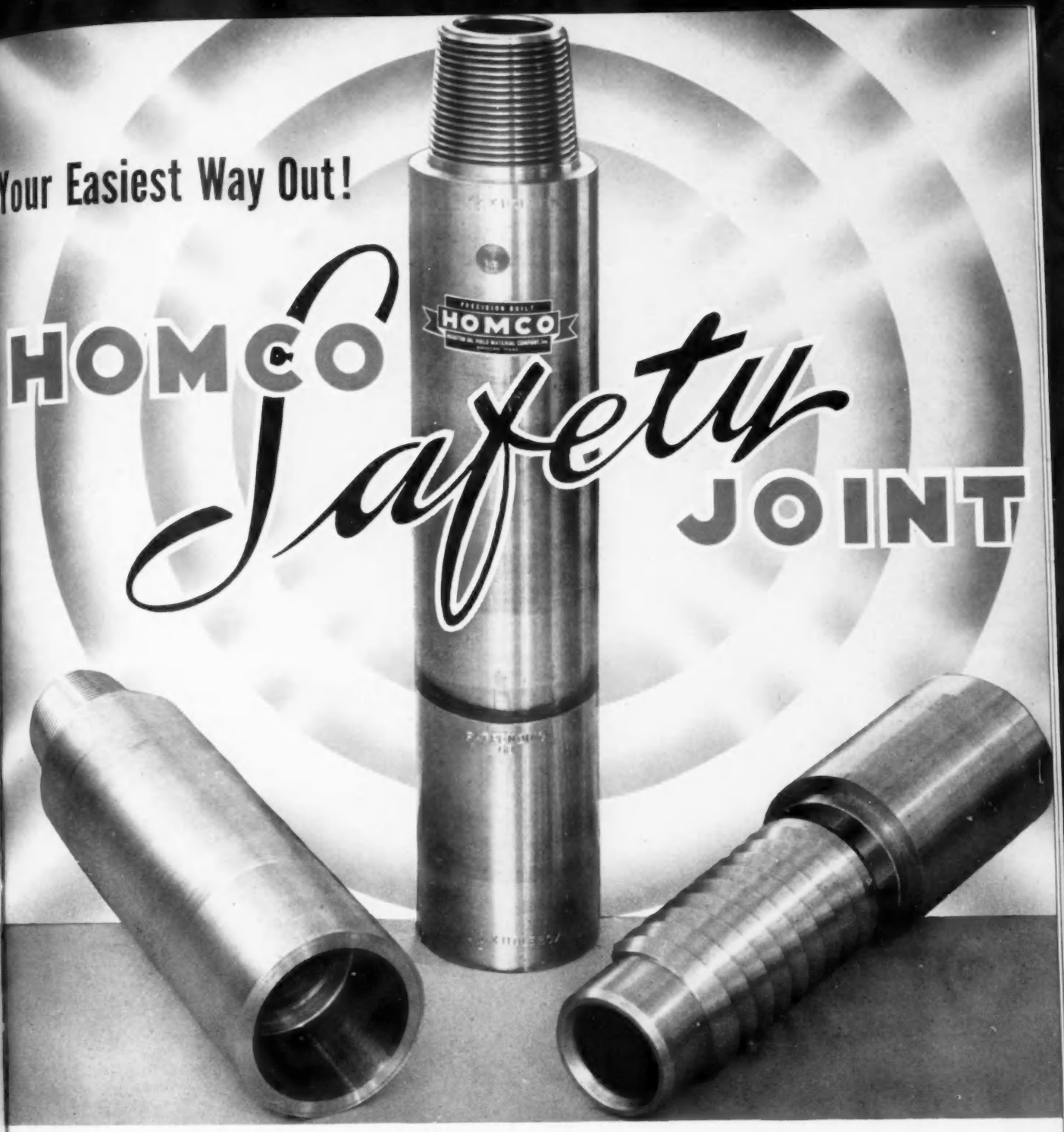
The company likewise has freedom of action in employing engineers, other technical men, and office workers, who are classed as "confidential" employes, outside the sphere of the labor syndicate. Although Pemex continues to employ some specialized U. S. engineers, they are retained mainly for work on special problems and for training Mexican engineers under the basic policy of employing the country's own citizens to the maximum extent possible.

For its source of young engineers coming into the organization, Pemex depends heavily upon the National University of Mexico, at Mexico City. From that university there are available about six petroleum engineering graduates each year. In addition, Pemex finds prospective technical employes among the school's graduates in mechanical, electrical, civil, and chemical engineering.

The oil industry workers of Mexico

Your Easiest Way Out!

HOMCO Safety JOINT



POSITIVE RELEASE by slight left rotation—no wedging action; thus no weight required.

POSITIVE SEAL inside and out by proper packing of both box and pin.

RUGGED CONSTRUCTION from annealed stock, heat-treated for stress relief and strength.

FULL HOLE TYPES for use on wash pipe—or on tubing for packer and screen setting; circulation not impaired; passes wire line equipment easily.

EARLY DELIVERY from factory.

HOMCO

HOUSTON OIL FIELD MATERIAL COMPANY, INC.

HOUSTON, TEXAS

Complete

are the highest-paid among all the principal industries, their wages being determined under the syndicate's contract with Pemex. In addition, the company provides numerous special benefits for its workers and in some instances for the general public. In 1944 Pemex supported 43 first class schools attended by over 9000 pupils from the families of workers. Also taught were about 3000 outside children where no other schools were available. Pemex also provides scholarships for employes and employes' children in universities of Mexico and several in U. S. universities, and supplies books for 21 libraries used by workers' families. It furnishes workers with sports facilities and equipment and gives financial encouragement to music and bands among employes. The company is engaged continuously in road building in connection with its operations, and many of these roads become public highways without Pemex being compensated. Much of the important road building in the Poza Rica district has been at the expense of Pemex.

Broad Responsibility

Although Petroleos Mexicanos has the responsibility of operating as a sound business institution, it also has a broader social responsibility than a private company. While it must look closely to the welfare of its employes, the company is in fact a part of the government of Mexico, and must promote the welfare of all the people of the nation in so far as petroleum development and consumption are concerned. While solicitous of the benefits of its employes, its policies and operations must be determined with due regard for the interest of all consumers and potential consumers. It is the responsibility of Pemex to encourage and promote more road building and wider distribution and consumption of oils, toward the end that the benefits of the nation's petroleum resources shall be enjoyed by the maximum number of people. In accordance with that concept, the company must work constantly toward expansion of all branches of the industry, toward greater consumption and increased supply. And in recognization of the interests of the public, gasoline and other oils are made available at reasonable prices, which are closely comparable with prices paid by consumers in the United States. The price of gasoline to the motorist in Mexico, while in line with prices in the United States, includes road and state taxes equal to those in the high-tax states of the U. S., indicating net selling prices of Pemex in line with those of U. S. companies. Although the tax on gasoline is the same throughout Mexico at 10 centavos per liter (7.8 cents U. S. currency per gallon), the wholesale and retail prices vary according to cost of transportation. Pemex operates directly only one of its service stations, that at the tourist camp at Tamazunchale on the Laredo highway. Other stations are leased under one-year contracts, renewed automatically unless the stations are operated inefficiently. The company posts schedules at which it will sell in wholesale and retail volume at different points, and the service stations operate within that margin. Gasoline is sold in two grades, regular and premium. Prices in effect in August, 1945, at Mexico City and at Tampico are shown in an accompanying table, with U. S. equivalents.

Labor Problems

Although Pemex points with pride to the high standards of economic welfare of the workers in the industry, one of the most important problems of the company is that of fulfilling the demands of the labor syndicate without detriment to development programs and the public interest. The management does not feel that wage rates and benefits are too high, but on the contrary regards them as desirable. However, it feels that some of the rules and restrictions set forth in the labor syndicate contract result in inefficiency and the failure of labor to justify the payments received. The management is especially handicapped by the union's rules, written into the contract with Pemex, regarding hiring, firing, and promotions. Under these restrictions, Pemex cannot offer proper incentive for good work or avoid inefficiencies due to poor work, as it cannot make promotions on the basis of merit while it is obliged to advance syndicate men with seniority regardless of their ability. When a job is open, the syndicate offers for it a man with required seniority, who in effect must be accepted by the management. The management can reject a candidate whom it considers as not being properly qualified, but may then be offered an even less desirable worker. Grounds for firing a man are several specific reasons, such as drunkenness and negligence. In consequence of these restrictions, men often take attitudes of indifference or defiance. Good men may reach the conclusion that special effort is pointless, while men without ambition feel secure in their jobs whether or not their work is done efficiently.

Common Problems

While Pemex has to deal with these labor problems as best it can, there are similar problems also in other industries, and the possibilities for correction lie not within the industries and companies but within the government. In Mexico, as in many other countries, including the United States, organized labor is a powerful force in the shaping of governmental policies. Within Pemex it is pointed out that the company's labor problems do not represent a peculiar or isolated situation; that problems posed by organized labor confront nearly all countries, prominent among which is the United States.

Postwar Problems

Other problems which have confronted Pemex have included those arising out of the war. Transportation difficulties interfered with normal exports, and shortages of equipment and materials have circumscribed drilling and other development. But the return of peace gradually will remove these handicaps, and the company expects henceforth to expand development materially, especially with respect to drilling and wildcatting.

While Petroleos Mexicanos is largely the Mexican oil industry within itself, there are limited private holdings, including especially those of Gulf Oil Corporation, whose properties were not expropriated. Other American companies have settled with the Mexican government, but the British-controlled Aguila company (Shell), the largest owner of oil properties before expropriation, maintains its claims and no settlement appears near.

It is impossible to foresee whether Mexico will ever be interested in inviting foreign companies back, although it is conceivable that several years of extreme difficulty in proving up new reserves might cause a change of attitude and the working out of agreements and contracts under which companies from the United States or other countries could and would turn.

Pemex Gasoline Prices, Retail and Wholesale

(Posted in August, 1945, at Mexico City and Tampico. Includes road and state taxes of 10 centavos per liter, equivalent to 7.8 cents, U. S., per gallon)

	MEXICO CITY		TAMPICO	
	Pesos per Liter	U.S. Dollars per Gallon	Pesos per Liter	U.S. Dollars per Gallon
Regular Gasoline 59 Octane No.				
1 to 999 liters (0.2642 to 263.9 gallons)	0.23	0.1795	0.215	0.1678
1,000 liters or more (264.2 gallons or more)	0.21	0.1639	0.195	0.1522
Mexolina 68/72 Octane No.				
1 to 999 liters (0.2642 to 263.9 gallons)	0.27	0.2107	0.255	0.1951
1,000 liters or more (264.2 gallons or more)	0.25	0.1951	0.235	0.1834

(**Conversion Factors:** 1 U.S. gallon = 3.7853 liters; $1.00 U. S. currency = 4.85 pesos.)

WHAT YOU SHOULD KNOW ABOUT THE BAKER MAGNESIUM ALLOY CEMENT RETAINER

WHAT IT IS

Developed and pioneered prior to the war, production was deferred due to the scarcity of vital magnesium. The Baker Magnesium Alloy Cement Retainer now offered is completely successful for practically every type of service, and the demand for it is rapidly increasing.

Baker Magnesium Alloy Cement Retainers are easily drillable, and the only larger size parts not made of magnesium are the slips. These are made of nitricastiron, and are readily broken up.

They can be drilled up by using 2-inch tubing—and are readily drillable with cable tools.

A Magnesium Cement Retainer also can be used for short period of time as a temporary bridge plug.

WHAT IT IS NOT

Retainers of magnesium are not recommended for permanent bridge plugs, although they may be so used for limited periods.

Baker Magnesium Alloy Cement Retainers are not so low in their purchase price as the cast iron type, but the overall "cost of results" is much less.

AND IT *IS* COMPLETELY SUCCESSFUL for all of these vital applications for which modern operators find the Baker Cement Retainer indispensable . . .

RE-CEMENTING • SQUEEZE JOBS
CEMENTING BEHIND SECTIONS OF PIPE
TESTING UPPER CASED FORMATIONS
REDUCING GAS/OIL RATIOS
CEMENTING BAD PIPE
PLUGGING OFF BOTTOM FLUIDS
CEMENTING OFF TO PERFORATE FOR PRODUCTION
CEMENTING TWO STRINGS TOGETHER
CEMENTING LOW PRESSURE ZONES
AND OTHER SIMILAR OPERATIONS

BAKER Model "K" CAST IRON CEMENT RETAINERS

BAKER Model "K" Cast Iron Cement Retainers (illustrated at right) are not to be discontinued, but as for many years past, they will be found satisfactory for any retainer service where the ultimate in easy drillability is not required; or where a permanent bridge plug is desired.

BAKER JUNK BASKET

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Men Who Guide the Destiny of Pemex

MANUEL AVILA CAMACHO

Camacho, whose six-year presidential term began December 1, 1940, was born in Tezuitlan, State of Puebla, on April 24, 1897, the son of a farmer. He was trained as a bookkeeper and accountant but joined revolutionary forces and fought with Cardenas.

As Secretary of National Defense in Cardenas' cabinet he mechanized the Mexican army, and in 1938 achieved highest army rank, division general, for the suppression of the bandit Cedillo.

As president he controls Petroleos Mexicanos, appointing five of the governing board of directors and also the general manager.

GUSTAVO P. SERRANO

Serrano, chairman of the board, is a member of the cabinet of the President of Mexico, being Secretary of National Economy. Since the chairman of the board of Petroleos Mexicanos is by law the Secretary of National Economy, he is the head of the Pemex directorate. The board of directors consists of nine members, including five chosen by the President and four by the labor syndicate.

EFRAIN BUENROSTRO

Buenrostro, general manager, was born in Jiquilpan, Michoacan, Mexico, in 1896. He first attended school in the city of Zamora, in the same state, and later moved to Guadalajara, Jalisco, where he received his higher education. He won his first appointment in the Mexican consular service through competitive tests and was sent to San Francisco as chancellor and later became consul.

He returned to Mexico and entered the service of the government as first undersecretary of the government of Michoacan, his native state. This position was followed by that of general secretary of government of the same state.

Because he had specialized as an economist he filled high positions with the federal government, such as assistant treasurer of the nation and, later, as sub-secretary of the Treasury. During the term of President Lazaro Cardenas, he became Secretary of the Department of National Economy, and it was while he held this position that he intervened in the solution of the oil problem in 1938 and became chairman of the board of directors set up to administer the affairs of Petroleos Mexicanos. At the same time he continued as Secretary of National Economy.

When President Manuel Avila Camacho was inaugurated he was appointed general manager.

Suarez, Secretary of the Treasury of Mexico and a member of the board of directors of Petroleos Mexicanos, is a prominent attorney and political figure. He is one of the five men serving as Pemex directors through presidential appointment.

MANUEL S. CUEN

Cuen, assistant general manager, is the No. 2 man in the active management of Petroleos Mexicanos, ranking next to the general manager. He was born at Culiacan in May, 1900, and studied law and obtained his law degree at the National University of Mexico.

He has occupied various important government positions, including general director of revenue for the Treasury Department, chief of the legal counsel of the Department of Public Education, chief of legal counsel for the Department of National Economy, undersecretary of the Department of National Economy, and secretary of the board of directors of Petroleos Mexicanos. A well-known economist, he has served various financial institutions of Mexico.

EDUARDO SUAREZ

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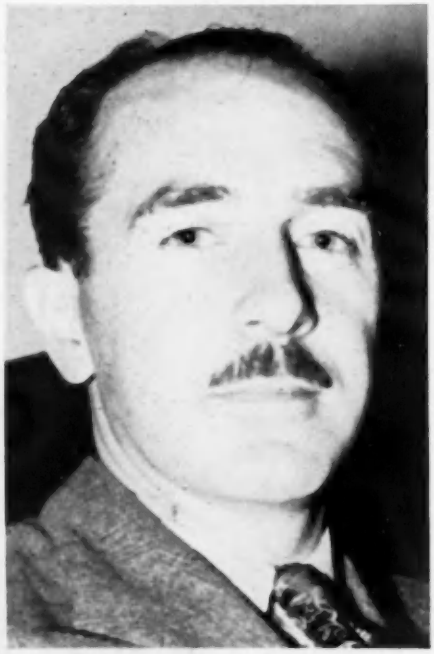
Men Who Guide the Destiny of Pemex

RAFAEL MICHEL

Michel, technical assistant to the general manager, was born in Guadalajara and attended the University of Guadalajara, where he received the degree of civil engineer in 1925. He then went to Tampico to work for the federal government agency enforcing the petroleum laws, dealing with the granting of drilling permits, checking casing cement jobs, etc. After three years with that agency he went with Pan American Airways for a year as civil engineer in charge of construction of the airport at Tampico. During the following year he was with a firm of water plant contractors at Tamipco.

In 1931 he returned to petroleum industry work, joining the government agency, the Control de Administracion del Petroleo Nacional. Subsequently, he went with Petroleos de Mexico ("Petromex"), an operating oil company representing government and private capital, as manager of the Tampico area. He remained with that company until the expropriation in March, 1938. Going then to Petroleos Mexicanos, he was named a member of the board of directors and technical assistant to the general manager. He is no longer a member of the board of directors, but remains as technical asisstant to the general manager.



ALFONSO BARNETCHE

De la Cueva, technical assistant to the assistant general manager, is a civil and petroleum engineer. He began his connection with the oil industry of Mexico 20 years ago. Born at Guadalajara, he attended schools there and studied engineering at the Free School of Engineers, now a part of the University of Jalisco.

He went to Tamipco in 1925 to work for the federal government in technical petroleum inspection until 1927; worked for a year with the National Railways at the Tampico terminal; came back to the petroleum department of the ministry of industry and commerce at Mexico City until 1929. He was then sent for a year to Tampico as chief of technical petroleum inspection, and in 1931 moved to Monterrey in the same capacity, returning to Mexico City at the end of 1933.

ABEL DE LA CUEVA

In 1938 he was called to serve Petroleos Mexicanos in its commercial branch, and later became technical assistant to the assistant general manager, which position he still holds.

Barnetche, chief petroleum engineer, was born in Matamoros, Tamaulipas, in 1913, and is half French. He went to primary school at Matamoros and preparatory school of the University of Mexico at Mexico City, then to the national school of engineers at the National University, taking civil and petroleum engineering degrees in 1935. While in college he was a junior geologist of the Institute of Geology.

After graduation he went to work for Sinclair Oil Company as petroleum engineer, having previously worked for the Huasteca and Aguila companies during college vacations.

Sinclair sent him to the United States in 1935 and 1936 to be trained in geophysical work with the Independent Exploration Company of Houston. He later worked in Mexico for the government company, the General Administration of National Petroleum, and in 1938 was transferred to Petroleos Mexicanos as a geologist. In 1939 he was promoted to chief petroleum engineer, his present position. In 1941 and 1942 he spent several months in the United States, observing new methods in the industry.

CARLOS L. CORCUERA y RIBA

Corcuera y Riba, manager of refineries, was born in Mexico City but reared in Guadalajara, Jalisco, both his father and mother having been members of old Spanish families. He attended the College of Jesuits in Guadalajara and then went to Cambridge University, England, where he spent four years and graduated with honors in 1929 as an industrial engineer, equivalent to mechanical engineer. From England he went to Spain for a short time and then returned to Mexico, where he worked with his father in his haciendas for two years.

He entered the oil industry in the service of Compania Mexicana de Petroleo "El Aguila," subsidiary of the Royal Dutch-Shell group, in 1931. After that date he held various responsible positions with the company, including subchief of the cracking plant and superintendent of distillation in the refinery at Minatitlan in the Isthmus; chief chemist and superintendent of the paraffin plant at the Ciudad Madera refinery in the Tampico district; and finally relief technician in the various refineries of "El Aguila," until the expropriation decree of 1938. He then went with Petroleos Mexicanos as manager of the refining department.

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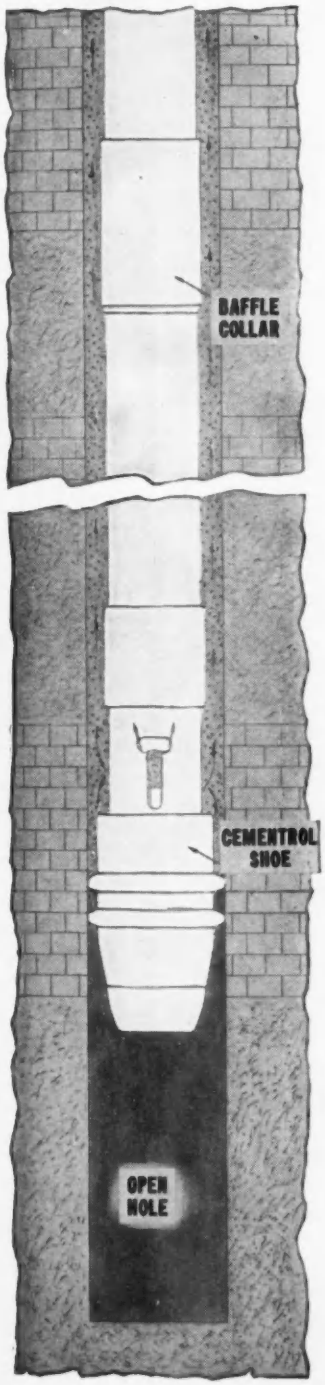

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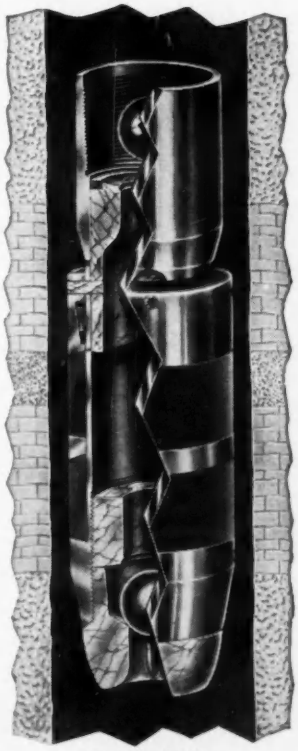
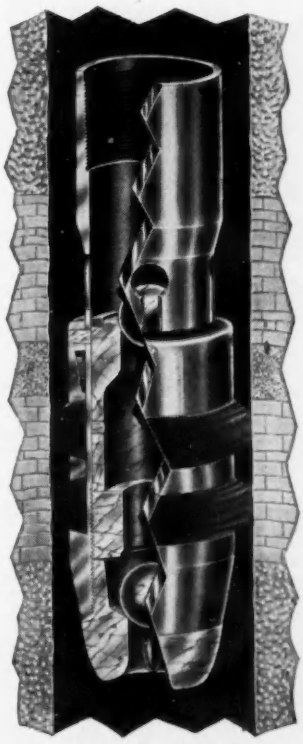


CEMENTROL Shoe, running-in position



Packer set, casing bridged, side cementing ports exposed

* *Reg. U. S. Pat. Off.*

Men Who Guide the Destiny of Pemex

J. M. DE LA GARZA CARDENAS

Cardenas, production manager, was born at Chihuahua, state of Chihuahua, in 1902, and received his higher education at the University of California at Berkeley. There he received the B.S. degree in petroleum engineering in 1927.

He returned to Mexico and was with the petroleum department of the federal government (equivalent to the U.S. Bureau of Mines) until 1936. With that agency he served first as inspector and later as chief inspector of oil operations. He then became associated with Dow Chemical Company in the Tampico district. In 1938 he was appointed production manager for Petroleos Mexicanos, and he still holds that position.

JORGE CUMMING

Aguilar, head of the exploration department, was born in Culiacan, state of Sinaloa, April 25, 1910. He went to the National University of Mexico, and received a degree in petroleum engineering in 1932.

He then went to work for "El Aguila" company as a petroleum engineer in the Isthmus and remained there until 1935. He went abroad for the Royal Dutch-Shell group, with which he remained until 1940. In that work he was stationed mostly at The Hague, but also went to Trinidad, California, Roumania, and Egypt, dealing especially with exploitation geology.

He was due to go to the Netherlands East Indies for the Royal Dutch-Shell company when he returned to Mexico City for a vacation in 1940. At that time he decided to comply with the wishes of friends who urged that his experience was needed in Petroleos Mexicanos and that he should resign and join Pemex. He went to Pemex as assistant to the production manager. When the exploration department of Pemex was formed in January, 1942, he was chosen manager.

MANUEL R. AGUILAR

Cumming, under-chief of the exploration department, was born in the mining town of Guanajuato. He is half English, his father having been an English mine owner. He studied in the National University of Mexico and was graduated as a mining engineer. He started his professional career as assistant geologist with the Mexican Geological Survey, and remained in that capacity for nine years. He then became chief oil geologist, a position he held until the latter part of 1933. In the years 1933-1939 he worked for several oil companies and did consulting work in oil and mining geology.

After joining Petroleos Mexicanos in 1939 he was general field superintendent for the Isthmus region until 1941. He then helped to organize the department of exploration and became under-chief of the department. He is the author of various papers on the oil geology of Mexico published by the Geological Institute of Mexico.

ALFREDO ORTIZ

Ortiz, manager of finances, heads a department that takes an important role in determining the operating program of Pemex each year. It maintains data on income and obligations of the company, and indicates what funds will be available for carrying out company plans.

Merino, superintendent for Poza Rica field, was in the Mexican government's department of communications and public works before joining with Petroleos Mexicanos in 1938 as construction engineer at Poza Rica.

He later was advanced to district engineer at Poza Rica, and subsequently became superintendent at Poza Rica.

JAIME MERINO

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Men Who Guide the Destiny of Pemex

RODOLFO M. FERNANDEZ

Fernandez, representative for Petroleos Mexicanos at Washington, D. C., and petroleum attache, Mexican Embassy, Washington, entered the oil industry in Mexico nearly 25 years ago, having gone to work for the Huasteca company (Doheny interests) in 1921, for which he built a topping plant at Mata Redondo. He was later in the fields in production work and as a general oil field contractor. His activities included drilling of wells and construction of pipe lines, pump stations, and refineries. He later extended also into all kinds of construction, including erection of hotels and other buildings.

After the expropriation he was called into the organization of Petroleos Mexicanos, and when war came, he was sent by Pemex to Washington.

JOSE COLOMO

Colomo, chief of the department of coordination and technical study, is civil and petroleum engineer who has been long identified with Mexico's oil industry. He started about 1918 in the petroleum department of the ministry of commerce, and served there for a long period as supervisor of technical petroleum inspections. He then became subchief of the petroleum department, and about 1935 was one of the executives in "Petromex," company representing a combination of government and private capital.

Now head of the department of coordination and technical study in Petroleos Mexicanos, he works directly under the general director, coordinating activities of the different departments. Public spirited and interested in educational work, he serves meanwhile as one of the teachers of the petroleum engineering faculty at the University of Mexico.

MANUEL G. LEIVA

Leiva, manager of the domestic sales department, was born in the city of Guanajuato in 1906. He began work in the oil industry as office boy in 1925.

He received his technical training in the school of business administration of the National University of Mexico.

He has held the following positions in the industry: bookkeeper in the auditing department, purchasing agent, head of the asphalt and fuel oil sales department, and after 1938 the positions of assistant manager of the oil administrative board section 5, sales assessor of the general administrative board of Petroleos Mexicanos, and finally, that of manager of the domestic sales department.

TEODORO CRUZ RICARDO

←

Ricardo, social welfare manager, is a prominent lawyer who recently joined Petroleos Mexicanos after having served as substitute governor of the state of Sinaloa.

As head of the social welfare department of Pemex, he guides the company's services and activities in the fields of promoting the general social welfare of workers. Through this department, Pemex promotes health, hygiene and medical care of workers and their families, aids public libraries and schools in the interest of workers' families, and financially encourages sports activities.

→

Reynosa, export sales manager, was born in Guanajuato. He worked his way up in the oil industry from the position of stenographer. He served the Aguila and Huasteca companies, and became sales manager for Huasteca.

In March, 1938, he was appointed submanager in the domestic sales department of Petroleos Mexicanos, and since 1940 has been export sales manager.

He is the son of Jose Reynosa, engineer, who died recently and who was partly responsible for development of the famous Dos Estrellas mines at Pachuca.

CARLOS REYNOSA

Pipe line from Poza Rica to Mexico City crosses the river on a highway bridge in its sharp climb through the mountains (from a little above sea level to a maximum altitude of more than 1½ miles).

MEXICO *Looks Ahead*

Pemex Expands Pipe Line, Distribution Facilities

By L. J. LOGAN, Associate Editor

AS THE official trustee of Mexico's petroleum resources, the government-operated oil company, Petroleos Mexicanos, foresees and is confidently planning a future in which the nation's consumption of oils will show a healthy increase and in which the requirements will continue to be fulfilled by the country's own resources.

Mexico has continued to export crude oil and refined products to the extent of several million barrels per year and may find it desirable to maintain limited exports. But shipments abroad are considered secondary, and primary consideration is given the desirability of expansion of domestic consumption and a corresponding expansion of the domestic industry in all its phases.

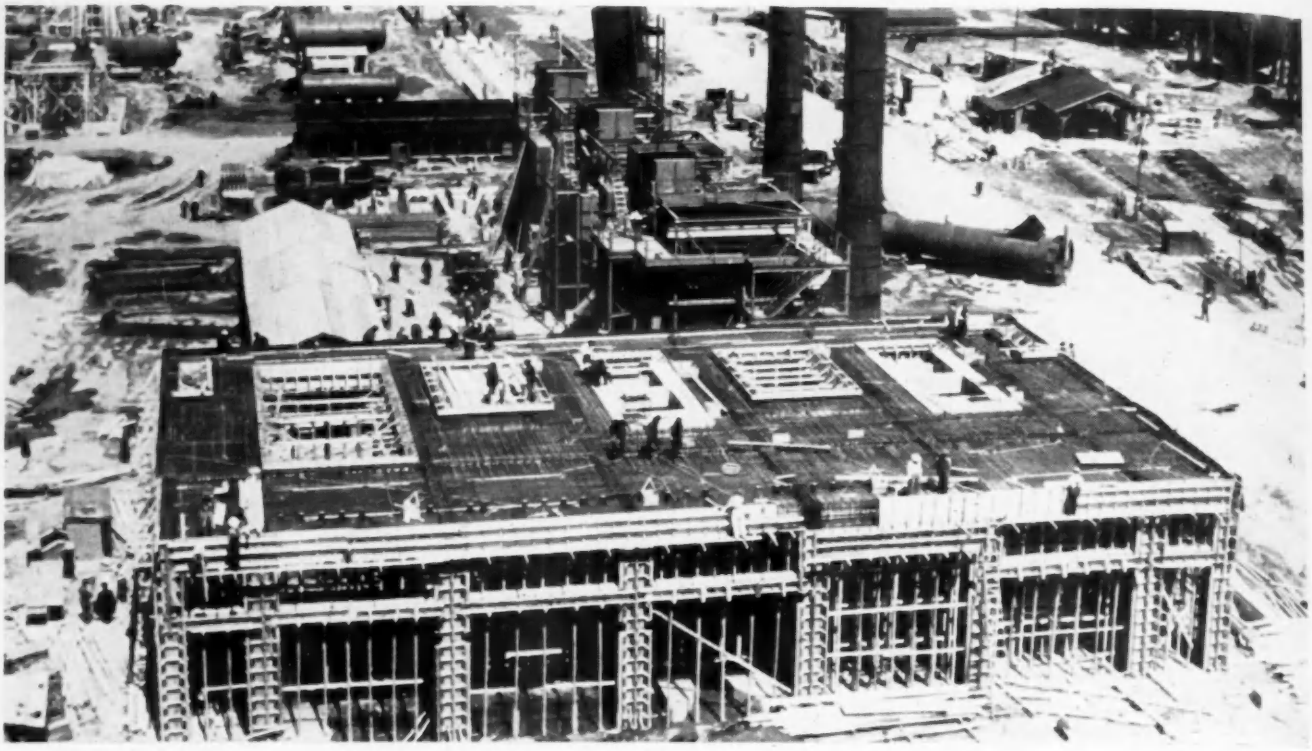
That this is the guiding philosophy of Petroleos Mexicanos as well as the Mexican government is attested by the slogans which have been inscribed in neon signs across the company's main office building in Mexico City. Across the top of the left wing of the building are words meaning, "Consume that which the country produces," and across the right wing, "Produce that which the country consumes."

Double Responsibility

This philosophy confronts "Pemex" with a duoble responsibility of encouraging and stimulating consumption on the one hand and of being able to fulfill the demand on the other. But the company accepts both obligations with optimism and assurance. To make possible increased consumption, it currently is expanding facilities for refining and distribution and has definite plans for still further expansion. And to assure continued adequate supply of oils to meet demand, the company is working toward maximum recovery of present reserves and it also is seeking with some success to develop new reserves, while plans for the future lay heavy emphasis on intensification of geological and geophysical work, wildcatting, and other drilling.

There is no doubt that Mexico's domestic consumption of petroleum will increase steadily in the future, as it has done in the past, if the required supply is available. For the country is growing and progressing, building roads, and becoming more industrialized. There was a slight decrease in consumption in 1938, the year of expropriation and disruption of oil industry development. But since then, consumption has increased every year, from 4 to 10 percent annually, or an average of nearly 8 percent per year. From about 66,000 barrels daily in 1938 the consumption had risen to approximately 96,000 barrels daily in 1944, an increase of over 45 percent in six years. These increases are comparable with the normal growth in consumption in the United States.

In order to keep in step with the



Part of the construction work at Atzcapotzalco refinery, Mexico City. Shown here are the power plant and boilers.

growing consumption, Petroleos Mexicanos has been and will continue active in expansion of its distribution and refining facilities. Present plans call for the installation of seven new bulk stations, increase of tankage in its foreign stations, and installation of about 20 service stations along new highways where no modern service stations now exist. The company at present is establishing a bulk plant at Brownsville, on the Texas border, with 30,000 barrels capacity, from which it will supply gasoline to the Mexican border area from Matamoros to Nuevo Laredo. The plant will be supplied by tanker from Tampico. The tankage has been completed and other installations are about 15 percent completed, war conditions and lack of materials having delayed the construction. Similar bulk plants are being established at Icacos (Acapulco area) and at Lerma, state of Campeche, southeastern Mexico. Those plants will be supplied by tankers from the Tampico Minatitlan refineries.

Pipe Line Planned

To supply points along Mexico's Pacific Coast, Pemex is shipping about 8000 barrels of products per day from the Minatitlan refinery by rail across the Isthmus to Salina Cruz and thence by tankers. However, long-range plans call for replacement of the Isthmus rail movement by pipe line handling. Building of a products line from the existing refinery at Minatitlan has been considered as a solution, but it may be decided to build a crude oil line from the Isthmus fields and a new refinery on the Pacific side of the Isthmus to supply the West Coast.

Refinery Construction

A more definite plan for expansion of refining and distribution is that for construction of a refinery at Salamanca in the state of Guanajuato, to the east of the city of Guadalajara and to the northwest of Mexico City. Actual work on that project was started in the latter part of September, in a ceremony at which President Manuel Avila Camacho laid the cornerstone and Efrain Beunrostro, general manager of Pemex, described the project as part of a "ten-year plan" of oil industry development. The refinery will supply the adjacent important industrial and mining region. It will have a capacity of 30,000 barrels of crude per day, and will be built partially with equipment from the Mata Redonda and Bella Vista plants in the Tampico district, which will be dismantled. Those two plants were still in operation in August, furnishing products to the United States, but they are in bad condition, and upon being dismantled, some of the equipment will be be moved to Salamanca and some will be scrapped.

This will leave at Tampico the two main plants, the Ciudad Madero and Arbol Grande refineries, which will adequately serve that district. Those plants are in fair condition, but are in need of modernization, which Pemex will undertake in the future. Pemex also plans to modernize the large Minatitlan refinery in the Isthmus. Already well advanced is the important expansion at the Atzcapotzalco refinery in the suburbs of Mexico City, which will give Mexico its first high octane gasoline production and take care of the general requirements of that large-consuming area for about five years. Likewise under construction are the crude stabilizing and natural gasoline plants in the Poza Rica field, which will recover from the field's gas production about 4000 barrels of petroleum liquids daily.

Laying New Pipe Lines

In connection with current and projected refinery expansion, some important pipe line system work is under way and more will be required. In connection with the present refinery construction at Mexico City and the projected construction at Salamanca, Petroleos Mexicanos has under way improvements on the Poza Rica-Mexico City pipe line. It consists of combination ten- and 12-inch pipe, and besides the station at Poza Rica field has six pump stations, each with two reciprocating type pumps connected to electric motors, affording a capacity of about 22,500 barrels daily. This was equal heretofore to the crude capacity of the Mexico City refinery. But it is hoped that this refinery, after current expansion, may be able to proc-

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Compressors being installed at the site of a large new absorption gasoline plant at Poza Rica. Equipment will include seven 600 horsepower and four 300-horsepower compressors and ten 100-horsepower auxiliary compressors.

ess as much as 50,000 barrels daily. Therefore, a similar increase in the carrying capacity of the existing pipe line has been undertaken. This work already is under way, and will involve installation of new, electrically driven centrifugal-type pumps at each of the six existing stations between Poza Rica and Mexico City and the construction of three entirely new stations similarly equipped with centrifugal pumps. One of the new stations will be between Poza Rica and the first existing station beyond the field, and the other two will be between the last existing station and Mexico City. The existing pipe line is a well-constructed, welded line, completed in early 1932 (THE OIL WEEKLY, Feb. 12, 1932). It will be depended upon to withstand the increased pressures to be provided by the new pumps, and there will be no looping of the line. While new pumps will be installed at the six existing station sites, the presently used pumps will not be removed. Instead, they will be employed, without being moved, on a new, 12-inch, 290-mile, 30,000-barrel daily capacity pipe line to be built from Poza Rica to the projected Salamanca refinery. That new line will be laid alongside the existing Poza Rica-Mexico City line over the mountain-climbing section between Poza Rica and the last of the existing stations near Beristain, and thence will fork off over a new, nearly straight route, adjacent to existing highways, to the Salamanca refinery. All the preliminary work on this projected new pipe line has been completed, and actual construction is to be started this year.

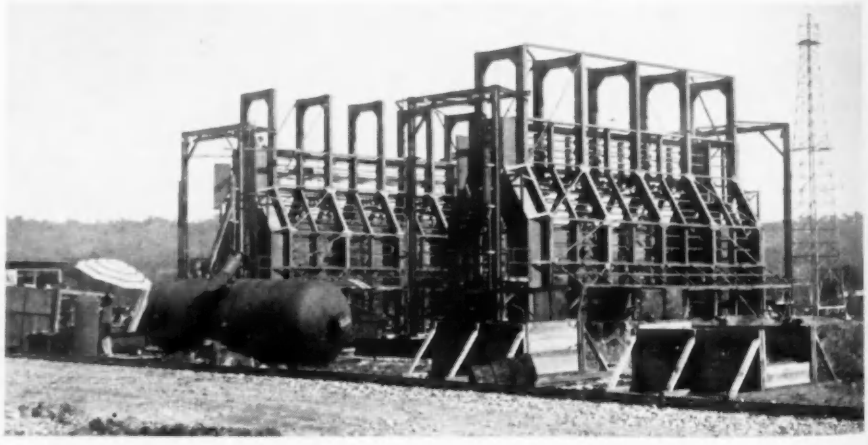
Poza Rica Plant

In addition to the current and projected expansion of distribution, refining and pipe line facilities, Petroleos Mexicanos has under construction an important project at Poza Rice field, which ties in with, and is a part of, the program involving the expansion of the Mexico City refinery and the pipe line system from Poza Rica to Mexico City. At Poza Rica the company is installing a modern new plant that will include a crude stabilizing unit and a large-capacity plant for recovering natural gasoline from the wet gas produced in the field. In connection with these units, an extensive system of pipe lines within the field, for delivery to the new plant, is being built.

Construction work is well advanced on the new Poza Rica plant, located near the machine shops and electric power plant. In the new plant, a crude stabilizing unit is being built, to drive out gas and the lighter ends, and facilities are being provided for desulphurizing the crude. For heating the crude, five updraft type heaters are being installed. In the absorption type gasoline plant unit of the project, there will be seven 600-horsepower and four 300-horsepower compressors, besides which there will be ten 100-horsepower units as auxiliary facilities. The gasoline plant will be able to process 60 to 75 million cubic feet of gas per day, and is expected to recover 3,000 to 4,000 barrels per day of liquids (butane, propane, and other lighter ends). Like most of the other equipment and materials that have gone into development at Poza Rica, those for the crude stabilization and gasoline plants are being moved in on the narrow-gauge railroad from Tuxpan, after going to Tampico by ship and thence to Tuxpan by barge, to the head of the railroad. Bubble towers will be moved in 40-foot sections and later welded together.

$20 Million Project

This new plant at Poza Rica, the pipe line improvement, and thee expansion of refining capacity at Mexico City comprise a project that has been described as an $18 to $20 million undertaking, for which the Export-Import Bank of the U. S. government loaned over half the capital. The work was classed as a war project, which would enter into the security of the Western Hemisphere and the United States and provide a new source of aviation gasoline in that connection. All the construction work is being done by Arthur G. McKee & Company, and the U. S. government's interest in the project has been looked after by the Petroleum Administration for War. In connection with the project, Petroleos Mexicanos also made a contract with Phillips Petroleum Company, under which Phillips serves as technical consultant to Pemex during the construction and as trainer of Mexican refinery engineers who will be in charge of operations when the project is completed. About 25 Mexican engineers are being trained in refineries of Phillips Petroleum Company in the United States, including those at Kansas City, Borger (Texas Panhandle), and Seminole (West Texas), the latter being nearest the Mexico City project. The Phillips company each week makes photographs and reports on progress of the refinery construction, sending them to the Mexican engineers in the U. S., so they can see the progress on the



Under construction here are two of the five updraft-type heaters to be embodied in the new crude stabilizing unit at Poza Rica. In the foreground is a narrow-gauge railroad which brings in materials and equipment.

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WIRE WRAPPED SCREEN

Layne Screen is wrapped with a flat bottomed semi "V" shaped wire, producing an inverted opening of the same shape that flares toward the perforations in the pipe. This shape opening offers a freer passageway for the fluid after it leaves the screening point of the wires.

The wire is not raised or elevated but wrapped directly on the pipe. Each wrap is under the same tension and pressure, assuring not only a uniform gauge opening, but a strong and rigid screen. This type of construction permits a thorough washing job as there is no space between the pipe and wire for wash water to run up or down the pipe.

Layne Screen is precision made and can be furnished with openings of any gauge desired. Before the wire is placed on the pipe it passes through accurate sizing rollers for uniformity and after being lugged it again passes through micrometer controlled sizing rollers.

To meet specific conditions Layne Screen offers a choice of Galvanized Steel; Admiralty Brass; Bronze or Stainless Steel Wire, all drawn and annealed with strength and toughness to withstand abrasion, yet ductile enough to permit wrapping on the pipe.

Layne Wire Wrapped Screen can be made on any size or length of pipe with plain drilled holes, milled groove openings or vertical slotted openings.

SCREW THRU PACKER

The sleeve has internal ratchet or buttress threads just above the canvas wrapping. The stem has external ratchet threads the full length of the canvas wrapping. When the sleeve is forced down the canvas is expanded and held in place by the interlocking of the ratchet threads.

The packer has 42" of finely woven canvas wrapping, which, when set, is compressed to approximately 20", assuring a pack that needs neither fingers nor slips to prevent the packer creeping up when exposed to high pressures. Layne Packers are made for all sizes of liner, screen and casing and can be set at any depth with either drill stem or tubing. A spear or trap will remove packer if necessary.

Layne Improved Ratchet Packers are made in three types. The All Canvas; the Lead Cone and Canvas, and the Double Seal Type.

★

SCREW THRU SETTING TOOL

This tool has only two moving parts. It is the simplest, most fool-proof setting tool on the market. It doesn't require picking up to release.

When setting, string is rotated eleven turns to right, the tool disengages from packer and will drop about 25 inches. It is impossible to set packer without first freeing the setting tool. The tool does not unscrew from the packer to release — instead the threads are disengaged by contraction. This action positively frees the setting tool and the packer is then set in the usual manner.

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Mexico's domestic oil consumption increases as more roads are built and the country continues to motorize and industrialize. Mexico City, a metropolis of 1½ million, is among the large-consumption areas.

plant. The company will continue to furnish advice and assistance until the refinery is in smooth operation, and probably will keep several technicians at Mexico City for a considerable period after the project is completed.

Modern Construction

The new facilities at the Mexico City refinery are being built with new equipment and in the most modern way. It is hoped that the refinery, when completed, can turn out 50,000 barrels a day of products. The new facilities include a new crude distillation plant, Dubbs cracking unit, alkylation plant, etc. The refinery heretofore was only a topping-skimming plant, and in order to provide sufficient gasoline production for the adjacent large consuming area, Pemex has supplemented pipe line runs of Poza Rica and Tampico district crudes to Mexico City by also piping in some gasoline from Tampico refineries and the limited natural gasoline production of the original, small absorption gasoline plant at Poza Rica. (The pipe line system to Mexico City extends on beyond Poza Rica to connect with the extensive system of the Tuxpan-Tampico region.) Mexico's total consumption of gasoline has been running around 15,000 barrels per day, and nearly 40 percent of the total is used in the Mevico City area. The existing refinery at Mexico City has been turning out about 6,000 barrels of gasoline per day, out of a total output of around 17,000 barrels of products daily, and the new plant when completed will be able to supply 16,000 barrels daily or more of automotive gasoline plus about 1,000 barrels a day of 91 and 100 octane aviation gasoline. The new facilities also will permit wider consumption of higher quality gasoline. At present about 90 percent of the gasoline sold is the 58 to 62 octane "Gasolina," and the remainder is the premium grade, 68 to 72 octane, "Mexolina."

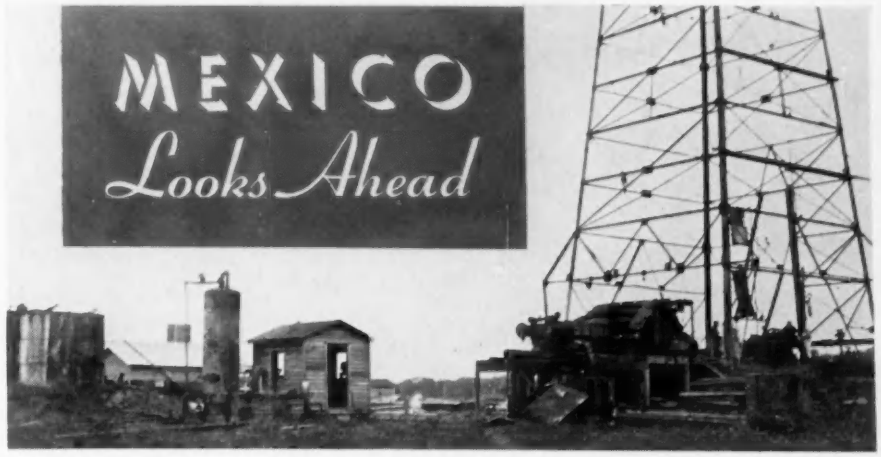
While Petroleos Mexicanos is carrying forward these major projects and plans, it also has under study an important question which is due to involve major construction work in one form or another. This is the question of what use will be made of the large output of surplus gas in the great Poza Rica field. Some American engineering specialists who have studied the reservoir conditions at Poza Rica have recommended that if oil production there is increased above 60,000 barrels daily, which happens to be the present rate, there should be installed a pressure maintenance system to return produced gas to the reservoir after removing the liquids. Although the present project at Poza Rica will provide facilities for recovering the liquids from the gas, a pressure maintenance program would require installation also of compressors and accessory equipment at large expense. Some of the experts have calculated that a pressure maintenance system involving return of 80 million cubic feet of gas per day to the reservoir would permit the production of 100,000 barrels of crude daily at Poza Rica without damage to the field. (Potential production is over 150,000 barrels daily.) In view of that opinion and the prospect that Poza Rica soon will have to be produced more heavily unless important new reserves are promptly developed, it is indicated that Pemex will have to give serious consideration to the proposal of installing the pressure maintenance system, which would tie in conveniently with the natural gasoline plant now being built.

There has been some thought that the residue gas from the new gasoline plant might be burned for carbon black, as Mexico has no carbon black production, if it is not returned to the reservoir.

Pipe Line Possibility

Another possibility for using the stripped gas, if not employed for pressure maintenance, is through construction of a large natural gas pipe line from the field to Mexico City. The principal market for the gas would be in industrial consumption, although Mexico City at present has only limited industrial activity. Distribution of gas in Mexico City for cooking and heating water in commercial and domestic usage would require construction of a distribution system which might have to be carried out by the government if provided. Although the climate is mild and equable, there also would be considerable demand for gas for heating homes and buildings at times, when it becomes uncomfortably cool. Meanwhile, Pemex already is taking part in meeting demand for fuels for cooking and heating by supplying consumers with liquefied petroleum gas, kerosene for stoves, and fuel for oil burners.

Tourist camp and service station of Petroleos Mexicanos on the Pan American highway at Jacala, state of Hidalgo.



At left are separator and tank, handling production from Pemex's Soledad 1, discovery well of new producing area, from which drilling rig is being removed.

Pemex Plans Vigorous Exploration Program

By L. J. LOGAN

WHILE Petroleos Mexicanos is carrying forward plans for important expansion of distribution, refining, and transportation facilities in Mexico, as set forth in an accompanying article, the company fully realizes that this expansion must be supported by measures for assuring continued adequate supplies of crude.

Consequently, Pemex is devoting much work and engineering effort toward maximum recovery of known reserves, including the cutting down of gas-oil ratios of wells at Poza Rica and remedial work on Isthmus wells with water and sand troubles. And it has expanded geological and geophysical search for new reserves to impressive proportions, while exploratory drilling has been increased and will be further increased sharply.

Exploration Parties

The company is employing currently 28 geological and geophysical parties (17 geological, 4 gravity, 6 seismograph, and 1 electrical), which represent, it says, more exploratory work than was ever carried on at any time by all the private companies combined. In 1946 the total number of parties will be increased to 36.

The exploration work is being done by native crews with exception of four seismograph parties furnished by two U. S. companies on contract basis (3 by Geophysical Service, Inc., and 1 by Westby Geophysical Company). Pemex also is obtaining advice in exploration and production problems, on contract basis, from the firm of DeGolyer and MacNaughton, consulting geologists and enginers, Dallas. The head of that firm, Dr. E. L. DeGolyer, is not only an internationally known authority on geology, geophysics, and petroleum engineering, but also is specially qualified by virtue of his wide experience in the earlier development of Mexico's oil industry under private-company operation.

More Wildcatting

In 1944 Pemex completed only four wildcats, but it completed the same number in the first seven months of 1945, and at the end of that period had six others drilling. For the immediate future, plans call for about 30 exploratory wells per year and total completions of about 75 wells per year.

This would be more than a doubling of either wildcatting or total completions as compared with the basis of development this year, and presumably would require acquisition of 20 or so complete new rotary drilling rigs in addition to extensive replacements and repairs on presently operated rigs. The company has at present only about 20 rotary drilling rigs, and practically all are in active service. Items which are needed for replacement on present rigs include, for example, more drawworks and more engines. Besides the drilling rigs, Pemex has about five workover rigs and needs more. Also needed, particularly, are more pumping derricks and more and better pumps and prime movers for production operations. In 1944 Pemex completed 34 wells, and development in 1945 has been on about the same basis. At present, Mexico's production of about 115,000 barrels daily comes from 932 wells, including 747 flowing naturally, 51 on gas lift, and 134 pumping.

For a while after the expropriation the need for new reserves did not appear highly urgent, as the rich Poza Rica field, added to the older fields, provided efficient producing potential well above actual production, which was held down by shrinkage of export markets. Immediately after the expropriation, Mexican oils were boycotted abroad and exports and production dropped sharply. Exports skidded from 23 million barrels in 1937 to 14 million in 1938, and production from over 46 million to 38 million. Mexico then resorted to bartering deals with Italy and Germany and ultimately revived sales to the United States and other countries, boosting exports to 18 million barrels in 1939, 20 million in 1940, and 16 million in 1941. Meanwhile, domestic consumption was increasing, with the net result that in the years 1939, 1940, and 1941, production averaged over 43 million barrels per year, or about the same as the average for the two years preceding expropriation. But then came Pearl Harbor and the shortage of tanker transportation which again cut exports and production. Exports dropped from 16 million barrels in 1941 to 6 million in 1942, 5 million in 1943, and 4½ million in 1944. In consequence, crude production dropped from about 43 million barrels in 1941 to about 35 million in each of the years 1942 and

Rotary drilling, with mud pumps at left, at Pemex's Soledad 2, after completion of No. 1 as discovery well of new producing area nine miles west of Golden Lane.

1943 and recovered to 38 million in 1944.

Through all these years, however, domestic consumption has steadily increased, and in spite of reduced exports, Mexico currently is producing crude oil on the basis of about 42 million barrels per year, or close to the pre-expropriation rate, with further increases in demand in prospect. Henceforth, moreover, demand will not be subject to abrupt decreases, because the domestic consumption has emerged as the predominant factor in the total demand. Pemex thus faces the responsibility of being able to produce crude oil consistently henceforth in volumes greater than before expropriation and ever increasing.

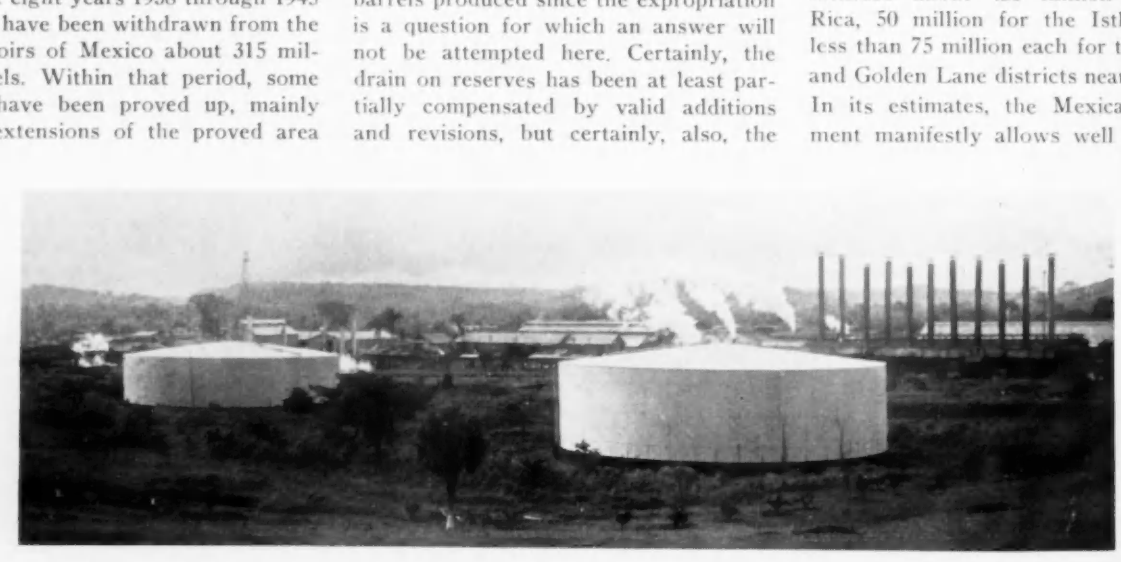
Needs New Reserves

As it faces this prospect, the need for new reserves becomes a matter for urgent attention. While all the above things were happening to the demand for Mexican crude, production continued steadily, although in fluctuating volume, and in the eight years 1938 through 1945 there will have been withdrawn from the oil reservoirs of Mexico about 315 million barrels. Within that period, some reserves have been proved up, mainly through extensions of the proved area at Poza Rica and the finding of new pay zones at El Plan and other fields of the Isthmus. These additions to known reserves have not been as impressive as if they had been achieved by finding and developing entirely new fields. But they have been bona fide additions like the similar "write-ups" regularly made in calculating proved reserves in the United States. Pemex also has made several discoveries of oil, gas, and gas-distillate, which may develop into fields, but which cannot as yet be credited with material reserves.

Finally, Pemex has revised upward its estimates of ultimate recovery at Poza Rica and other fields on the basis of increased knowledge of the reservoir conditions, improved production practices and methods, and remedial work on wells which will increase oil recovery. These revisions also are bona fide changes in estimates of ultimate recovery, conforming with procedure in the U. S. oil industry. To what extent all these additions and revisions have compensated for the 315 million barrels produced since the expropriation is a question for which an answer will not be attempted here. Certainly, the drain on reserves has been at least partially compensated by valid additions and revisions, but certainly, also, the record of proving up new reserves has not been so phenomenal as to warrant complacency. Nor is there such complacency on the part of Petroleos Mexicanos, whose problem the reserves situation is, as evidenced by the company's present and planned exploratory work.

President's Estimate

In his fifth annual report to the nation at Mexico City on September 1, President Manuel Avila Camacho included references to the oil industry and said Mexico's petroleum reserves were calculated at 870 million barrels. That figure evidently was based on data supplied by Petroleos Mexicanos, although the company itself declines to release figures on reserves. The estimate was not broken down by districts, and was a quite liberal figure in the light of other recent estimates. In its estimate of world reserves as of the beginning of 1944, the U. S. Petroleum Administration for War included, for example, an estimate of 600 million barrels for Mexico, which is understood to have included about 425 million for Poza Rica, 50 million for the Isthmus, and less than 75 million each for the Panuco and Golden Lane districts near Tampico. In its estimates, the Mexican government manifestly allows well above 500



General view in Poza Rica field. Beyond tank at right are central boiler station, machine shops, warehouses. Beyond tank at left is original absorption gasoline plant.

New

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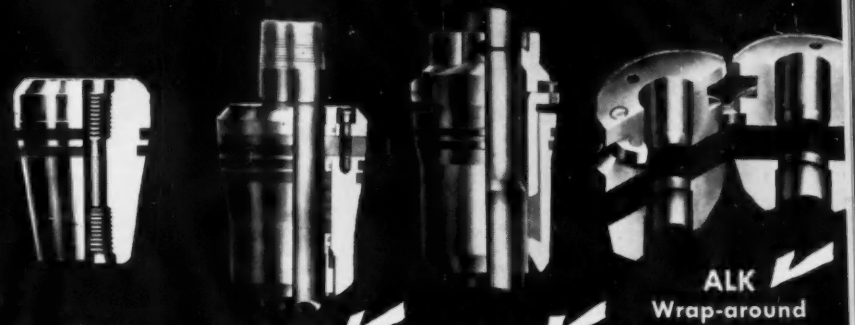

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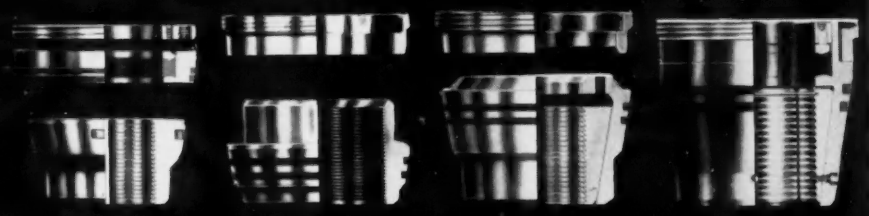
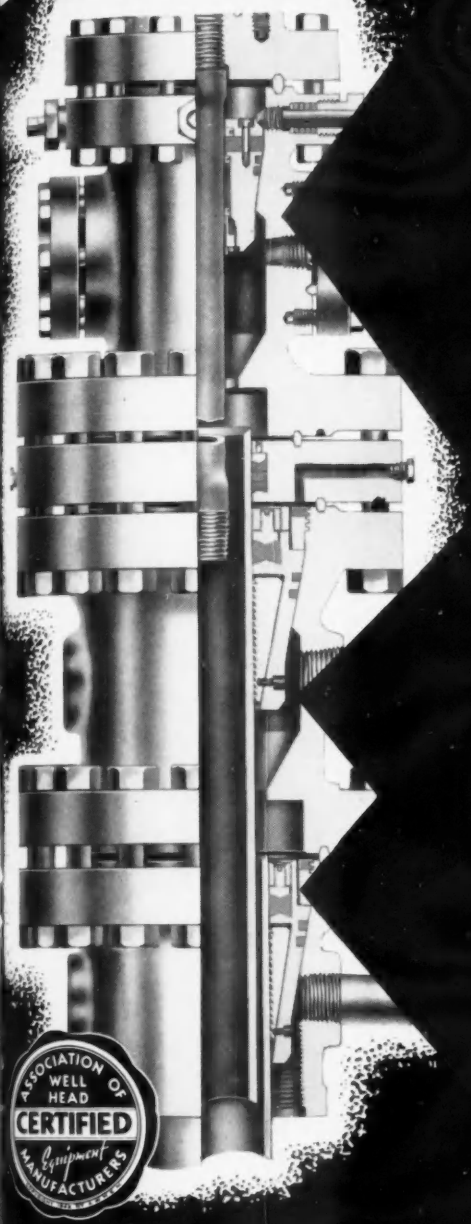


LHCS-1
Slip-Pack Type
Normal depth

LHCH
Threaded
Mandrel Type

LHCLWS
Slip-Weld Type

LHCS-2
Slip-Pack for
long strings



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Tampico
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PACIFIC OCEAN
LEGEND
PIPE LINES
PROPOSED PIPE LINES
GAS FIELDS
OIL FIELDS
REFINERIES
PROPOSED REFINERIES
Petroliferous zones, where there are gas or oil fields.
Zones considered as possible petroliferous, where no gas or oil fields are known to exist.

million barrels for Poza Rica and credits the Isthmus with relatively large reserves, as the Panuco and Golden Lane fields are fairly well defined and settled, offering limited room for variance of estimates.

Excellent Possibilities

Whatever disagreement there may be as to present proved reserves, there must be general agreement that Mexico has excellent possibilities for discovery of additional reserves in major quantities. Mexico already has produced close to 2,200,000,000 barrels of oil since the first output in 1901, or about 4.5 percent of cumulated world production. But all this impressive production has come from a comparatively small developed area within very much greater areas which have good oil possibilities but which so far have been only superficially drilled and quite inadequately examined geologically and geophysically. It is generally conceded that much more oil remains to be discovered in Mexico, although much work and expense will be required to find and develop it.

The large extent of area in Mexico which offers oil possibilities is indicated by some comparisons with areas in the United States. The whole republic of Mexico is roughly equivalent in area to that part of the United States east of the Mississippi River. And approximately ¼ or more of Mexico's total area has geological conditions more or less favorable for the existence of oil accumulations.

This area of oil possibilities excludes the broad interior mountains and plateaus and most of the Pacific Coast country from the United States to Guatemala, but does include several limited coastal belts along the Pacific, one of these being on the western side of Lower California. The bulk of the area of oil possibilities in Mexico lies within a belt of varying width which runs northwest-southeast for almost the full length of the country, first along the Mexican side of the Rio Grande and then along the Gulf of Mexico through the Isthmus and up into the Yucatan peninsula. Much of that Rio Grande-Gulf Coast belt has, of course, only lesser possibilities, but portions of it offer very attractive possibilities, in the light of the performance of fields already developed, and considering that these sections of Mexico are geologically related to other adjacent districts of the general oil-rich Gulf-Caribbean region.

Especially promising from the standpoints of possible future discoveries are the three major districts within which there is production and which have good possibilities for additional important fields. Listed from north to south, these include: (1) Northeastern Mexico, (2) the Tampico-Tuxpan district, and (3) the Isthmus or Southern district.

To reach the camp at Soledad, west of the Golden Lane, where a productive wildcat has been completed, this river must be forded. The water is too deep for an automobile after rainy season starts.

Northeastern Mexico

The petroliferous district of Northeastern Mexico lies across the Rio Grande from producing areas of the southernmost counties of Texas and is a continuation of that Texas district geologically, being a part of the Rio Grande Embayment. On the Mexican side of the river there have been discovered already 5 separate areas yielding gas or gas-distillate. They are spread out from the vicinity of Nuevo Laredo to Reynosa, near McAllen, Texas. Within that general area between Laredo and Monterrey on the west and the coast line below Brownsville on the east there are also known to be a considerable number of other structures offering promise of oil and gas. Petroleos Mexicanos is doing additional geological and geophysical work in the district and doubtless will locate more structures, and is doing and will continue to do wildcat drilling there.

Under the 1946 program at least two and possibly four or more prospects in Northeastern Mexico will be tested by wildcats. At work in the area now are three geological parties, one gravity party, and two reflection seismograph parties. Two of the gas fields so far opened, La Presa and Rancherias, contribute to the gas supply of Monterrey. The latest to be opened, Mision, is actually an extension of production on the Texas side of the river. The discovery well, completed in April, 1945, yielded 6 million cubic feet of gas and 45 barrels of distillate per day through a 25/64-inch choke from Oligocene sand at 6040 feet. A second well is being drilled with gas from the first. Also drilling in the district is a wildcat, Norias 1, southwest of the Mision production.

Although there is not any oil production in Northeastern Mexico, geologists say there is no reason why oil possibilities should end at the Rio Grande. And some American geologists familiar with that part of Mexico consider it as having possibilities for hundreds of millions of barrels of reserves. Substantial production of oil in that area would be very desirable because it would be near tidewater, convenient to important consuming areas, and gas would have a ready market at Monterrey and other points. Eventually, this region appears destined to become an important oil and gas area.

Tampico-Tuxpan Area

Listed second here but rating foremost among Mexico's oil districts in importance of past, present, and perhaps future production, is the Tampico-Tuxpan Embayment. Covering the northern half of the state of Vera Cruz and edges of some adjacent states, the district extends from the vicinity of Tampico on the north down the coast almost to Vera Cruz. Containing the Panuco district fields near Tampico, the world-famous Golden Lane fields south of Tampico, the great Poza Rica field farther south, and miscellaneous lesser fields, the region has produced over 2 billion barrels, or the greater part of all Mexico's cumulated output. And it likewise accounts for the bulk of Mexico's present proved reserves and production. Furthermore, it is looked upon as the No. 1 region in Mexico in possibilities for new reserves. The Panuco district has produced ¾ billion barrels of crude and the Golden Lane 1 billion, while Poza Rica has produced over 200 million and ultimately may yield ¾ to 1 billion. Petroleos Mexicanos views those phenomenal fields, considers that wildcatting has been very limited in the adjacent regions, and concludes that there must be other great fields awaiting discovery—perhaps more Poza Ricas and more Golden Lanes. These high hopes spring, moreover, from the exploration department—from among the geologists and

Docks at Poza Rica warehouse and flat cars on narrow-gauge railroad which brings in virtually all materials and equipment from Tuxpan on the coast.

geophysicists who are working with the problem of finding new reserves.

In the Tampico-Tuxpan Embayment, Pemex currently is searching for favorable drilling sites through five geological parties, a gravity party, and two seismograph parties. Meantime it is doing wildcat drilling on two prospects, one west of the Golden Lane (Soledad) and another between there and Poza Rica (Castillo). The exploration drilling program for 1946 calls for tests on five other prospects, including two west of the Golden Lane (Chila and Tlacolula), two east of the Golden Lane (Tanhuigo and Asuncion), and one southeast of Poza Rica (Xuchil-Huizcuautla).

New Fields

Although referred to in the above paragraph as a prospect. Soledad actually is a new one-well producing area which may develop into an important field, the discovery well having been completed July 30, 1945; while at the present writing the wildcat at Castillo is testing after logging interesting shows of oil. Both appear significant, because of similarities and relationship to Poza Rica. Soledad's production and Castillo's showings are from the Tamabra limestone, Lower Cretaceous, which is the pay formation at Poza Rica. As compared with Poza Rica's 7250-7500-foot production, the oil from Soledad's producer comes from 6480 feet, and the shows of oil and gas at Castillo are in a well drilled to 7795 feet. As compared with Poza Rica's production of 30-gravity (API) oil, that at Soledad is 40 gravity. On a map, Soledad and Castillo together with Poza Rica form almost a straight line running northwest-southeast and partially paralleling the southern extremity of the Golden Lane at a distance of about 8 or 9 miles west. Soledad is at the north end of this line, being about 8 miles due west of the town of Alamo, which is within the Alamo field of the Golden Lane. Castillo is about 15 miles southeast of Soledad and approximately mid-way between Soledad and Poza Rica. The Golden Lane runs on southeastward from Alamo for about ten miles, and is paralleled to the west by a line drawn from Soledad toward Castillo.

The Soledad discovery well, Petroleos Mexicanos' Soledad 1, was officially reported as completed on July 30, 1945, flowing 40 barrels of 40-gravity oil per day through 5/64-inch choke on tubing, which registered pressure of about 450 pounds per square inch. The well was drilled about 45 feet into the Tamabra and liner was set to bottom, but production is from perforations in the upper ten feet of the lime, the well having been acidized after squeezing off at the bottom. The well was drilled on the basis of torsion balance and gravity meter work and without benefit of detailed seismic work, subsequently done. A second test, Soledad 2, one kilometer southwest of No. 1, is down to the Tamabra. The seismograph picture indicated it should be structurally higher, but it was not, and it is now interpreted tentatively as being on the down-throw side of a fault running between the two wells. Therefore, for further exploration, a test in the opposite direction from the discovery well is contemplated.

Castillo 3 Tests

At Castillo the Pemex wildcat is Castillo 3, the area having been explored previously by two private-company tests. The Pemex well was located with benefit of detailed geophysical data indicating a pronounced anticlinal nose, or the same type structural condition as at Poza Rica. Current testing of oil and gas shows in the Tamabra follows cementing of liner through the limestone. The well is being tested by perforating at intervals from bottom upward, with aid of samples, cores, and logs.

Aside from discovering new fields, the possibilities for proving up new reserves in the Tampico-Tuxpan district are limited mainly to further development of the Panuco district and the Poza Rica field. The Panuco area embraces numerous pools producing heavy oil (10-14 gravity) from faults and fissures within Tamaulipas limestone of the Lower Cretaceous on a broad arch, and there are possibilities of proving up additional reserves in the large field, although market demand for this heavy crude is not currently urgent. The district still has recoverable reserves estimated at about 75 million barrels after having produced ¾ billion barrels, and most of its present producing wells are flowing, through benefit of water drive, affording a producing potential of about 25,000 barrels per day, or well in excess of recent rates of actual production. Petroleos Mexicanos has drilled over 50 wells in that field since the expropriation, bolstering potential production and reserves, and will do further such development as market conditions warrant.

Series of Pools

The Golden Lane is a virtually continuous series of pools in a field about 50 miles long and averaging less than a mile in width, beginning on the coast about 50 miles south of Tampico and extending southward in an arc beyond the Tuxpan River. The production of 20-24 gravity oil which has high sulphur content, is from porous limestone (El Abra) of Lower Cretaceous age along the top of the long and narrow anticline. The field has remarkably effective water drive and practically all wells flow naturally, affording potential output of about 25,000 barrels per day, although actual production has been generally below capacity in recent years because of market demand conditions. The great field has produced over a billion barrels of oil and is credited with remaining reserves of around 75 million barrels. But it has only limited possibilities for new reserves, namely, on the north and south ends.

Poza Rica Field

About 20 miles south and several miles east of the southern end of the Golden Lane is the rich Poza Rica field, producing 30-33 gravity oil from a porous patch of limestone on a large anticlinal nose. The formation is of the same age as the pays in the Panuco and Golden Lane fields but is of mixed facies including the Bathyal facies of the Tamaulipas of the Panuco field and the reef

facies of the El Abra of the Golden Lane. Consequently, the producing formation at Poza Rica is called the Tamabra, a name which is a combination of "Tamaulipas" and "El Abra." Poza Rica is one of the world's best oil fields, being expected to produce ultimately at least around ¾ billion barrels and possibly a great deal more, including about 210 million already produced, by virtue of its large area and large thickness of pay zone. The field so far embraces about 14,000 acres of oil-productive area, and is gradually being extended on the northwest, with indications that it may prove productive over 4000 or so additional acres. On the other sides present wells have approached the indicated limits of the field. The present productive area has been drilled on average spacing of about one well for each 250 acres, about 52 producers having been completed, although only 42 are being produced, with the rest shut in because of high gas-oil ratios or water intrusion or else being worked over for correction of those conditions. The zone of oil accumulation narrows out in thickness as wells get higher on structure and into the gas-cap area and likewise as wells are drilled lower on the structure toward the edge water. Between those extremes the section contains only oil and has a total thickness of as much as 600 feet, although containing some dense streaks within the porous lime which reduce the net thickness of oil pay by about 30 percent.

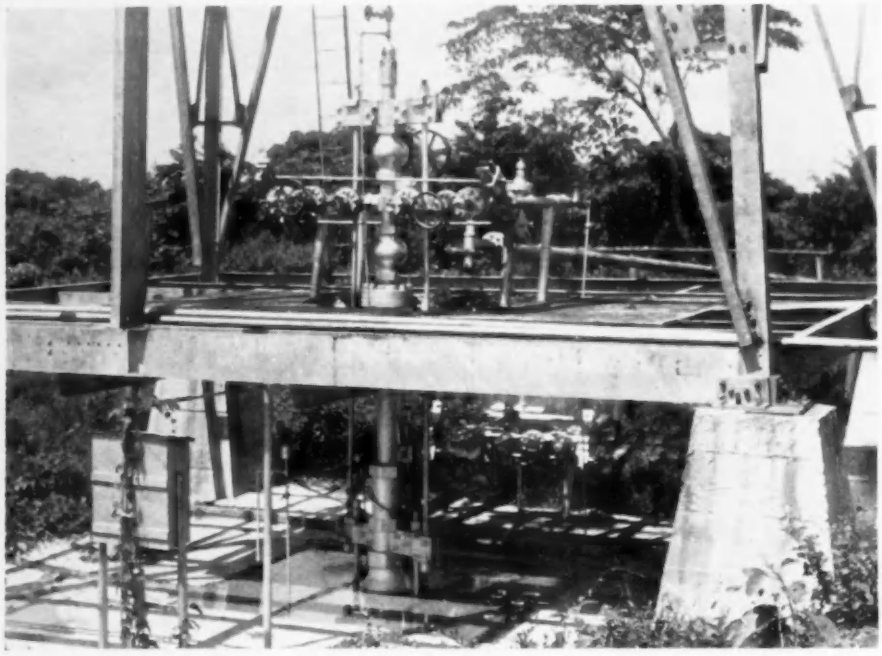
Pushing up against the oil, the water lower in the reservoir affords effective water drive for producing the oil and offers the possibility of draining the field largely by natural flow if properly handled. Accordingly, sound and advanced engineering measures are being employed toward the end of preventing expansion of the gas cap and avoiding irregular advance of the water, and success is attending these efforts. Wells with excessive gas-oil ratios are closed in, as are those which yield water. The field as a whole would not produce over 2 percent water if all wells were on production, but actually the wells showing water are closed in, and the field is producing only pipe line oil. Meanwhile, Pemex has been doing and will continue to do workover jobs on Poza Rica wells for reducing gas-oil ratios or eliminating water. This work started with the more troublesome wells and is being extended to wells of better but still faulty condition. In most instances the workover jobs involve older wells which were completed with open hole from the top of the lime to their total depths. In working such wells over, as in completing new wells, Pemex runs perforated and blank liner to bottom and then perforates where necessary to achieve the right gas-oil ratio or eliminate water. On the basis of present average spacing, 15 to 20 wells may be required in further developing the field to the northwest. In addition, more inside wells will be required, with spacing in different parts of the field depending upon the varying porosity of the pay lime. At Poza Rica, Petroleos Mexicanos currently is operating four drilling rigs and one workover rig, and this work together with that on the Soledad and Castillo prospects is the extent of present drilling in the Tampico-Tuxpan region.

Obtaining pure water is a problem in the Isthmus and other areas of oil activity in Mexico. Fresh water is being procured here from a large vine. At left is Manuel Rodriguez Aguilar, head of the exploration department of Petroleos Mexicanos. At right is D. E. Lounsbery.

Southern Zone

South of the Tampico-Tuxpan embayment and in the general area of Vera Cruz is a volcanic region where there are igenous intrusions and where no oil is expected. But southward on the coastal belt begins another basin, and there are possibilities for oil from there on across the northern half of the Isthmus and over the Yucatan peninsula. This extensive Southern Zone constitutes Mexico's third major region of present and prospective petroleum production. The present fields are in the north part of the Isthmus, within a saline basin, centering around the border between the states of Vera Cruz and Tabasco. The fields produce from Miocene sands on the tops and flanks of anticlinal salt structures. It is not known exactly how far this saline basin extends to the west or east. Although it is known to extend eastward somewhat into the state of Tabasco, the region still farther east is believed to have possibilities of Cretaceous production equivalent to that in the Tampico-Tuxpan basin, on the basis of geological and geophysical work. There are now about 30 known salt domes or structures in the saline basin, some being of the piercement type and others non-piercement, and several being exceptionally large. Some of these structures are still undrilled, others have been only inconclusively tested, while over ½ have yielded oil in non-commercial or commercial volume. Of these latter fields where oil has been encountered, about six yielded only non-commercial production, about the same number produced commercially but have been abandoned, and five are currently producing commercially. The five fields are producing a little over 15,000 barrels daily from 200 wells, which include some naturally flowing wells but mostly wells on pump or gas-lift, the actual output being close to maximum potential production.

Since the first production in the Isthmus in 1923, the fields of that district have produced somewhat over 125 million barrels, and remaining proved reserves are conservatively estimated at a



A flowing well at Poza Rica, with flow lines from both tubing and casing. During the war each of the widely separated wells was guarded by a soldier living adjacent thereto.

minimum of 50 million barrels, while Pemex engineers believe that El Plan alone has possibilities for 100 million barrels ultimate recovery, which would put it in the class with such Texas Gulf Coast salt dome fields as Spindle Top and Humble. With exception of El Plan, individual fields of the Isthmus are credited with ultimate recovery ranging up to 30 million barrels or so. El Plan is productive from several separate pay sands on top of the structure at depths of 2000 to 2600 feet and from an important sand on a flank of the structure at the 6000-foot level discovered two years ago. Optimism as to its ultimate production is based on the fact that the field is nearly two miles square and wells on top of the structure sometimes penetrate as much as 600 feet of saturated sand in series, while those on the flank encounter as much as 125 feet of oil sand, although these figures are materially above average net thickness of these pays.

There is considerable faulting of the oil sands on top of some of the Isthmus structures, including El Plan, and the tops of the salt masses are mostly irregular rather than smoothly rounded as is the case of many Texas-Louisiana salt domes. Cap rock has been tested but has not yielded commercial production, although a well at El Plan had shows of oil in the cap rock. While flank drilling offers possibilities for deeper pays not yet discovered, the possibilities lie mainly in the Miocene sands. It is not indicated that wells drilled on into the Oligocene would find important production as on the Texas Gulf Coast, as the Oligocene has been found so far to contain mostly shales, although it yielded a little oil in the Francitas field.

With the exception of El Plan, the present producing fields of the Isthmus are fairly well drilled up as regards the pay zones so far developed. But the gas-lift and pumping equipment on the wells is generally in poor condition, and more and better pumps and prime movers are needed.

Isthmus Operation Problems

In the Isthmus, operations are made difficult and expensive by numerous problems. The region is heavily forested, damp, humid, subject to floods, and has very few roads and railroads, making it necessary to transport equipment and materials principally by barges on the rivers, through canals that must be dredged, and over roads that Pemex has to build. Modern seismograph instruments are so delicate that they have to be specially fitted to work accurately in the dampness and high humidity. The rainy season extends from July through December or January, and in order to drill during that period it is necessary to get ready in the preceding dry season, building roads and bridges, moving in tanks and fuel and other materials and equipment, building camps, and making the necessary installations. The sites are far from sources of supplies (mainly points in the United States), and long shut-downs are involved when some breaks occur and parts must be replaced, although the return of peace will make more equipment available and reduce such delays. In the past it has taken an average of a year to drill an Isthmus wildcat. In preparing for development in the La Venta area a year was required to complete the dredging of a canal for transportation. In the actual drilling there are also numerous problems, including the penetration of some hard formations and heaving shale. In production operations, sand and water intrusions represent a common problem in older wells which were completed without benefit of modern engineering practice. Many of those wells produce simultaneously from several separate sands, either of which may drown out production on beginning to produce water. New wells are cemented through all sands, the individual sands are produced one at a time from bottom upward, through successive perforating jobs. Likewise, similar handling is being undertaken in some of the older wells by working them over and recompleting them, and this work bolsters or increases reserves.

Wells Drilling

Wells currently drilling in the Isthmus include two wildcats (one each on the La Venta and Tecuanapilla structures), one in the Cuichapa field, and four at El Plan field. The Pemex exploration drilling program for 1946 calls for wildcats on six structures, including three in the edge of the state of Vera Cruz (Pajaritos, Tuzandepe, and Capoacan Occidental) and three in eastern Tabasco (La Venta, Encrucijada, and El Aleman). Various other areas also have offered indications of structures through geological and geophysical work and remain yet to be tested by wildcat drilling. Meanwhile, further exploratory work proceeds upon a sizable scale. In the Isthmus region Pemex currently is employing five geological parties, one gravity party, and two seismograph parties, or exactly the same program as in the Tampico-Tuxpan region.

Although development in the Isthmus is difficult, fields there are favorably located with relation to consuming areas that they supply, and the refinery at Minatitlan is available for processing the crude. About ½ of current production goes across the Isthmus for distribution on the Pacific Coast, and that demand will gradually increase. Isthmus oils also are and will continue to be, in good demand for supplying the important consuming area on the north end of the Yucatan peninsula and intervening points on the coast as well as that portion of Mexico west and northwest of the Isthmus. From the standpoint of present and prospective demand there is ample incentive for further development of reserves in the Isthmus, and such development is well justified by the important possibilities for new reserves.

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Extensive Field Activities Seen as Company Explores Remote Barinas Area

By GEORGE O. IVES
Foreign Editor

Socony-Vacuum Oil Company shortly will have two rigs running in the Barinas area, one of the most remote areas now being prospected in Venezuela. The huge concession held by Socony covers 1,300,000 hectares, almost all of the state of Barinas (formerly Zamora) and will call for intensive prospecting before the end of the exploration term of the contract, at which time the company will be required to make a selection and turn back at least half of the acreage to national reserve.

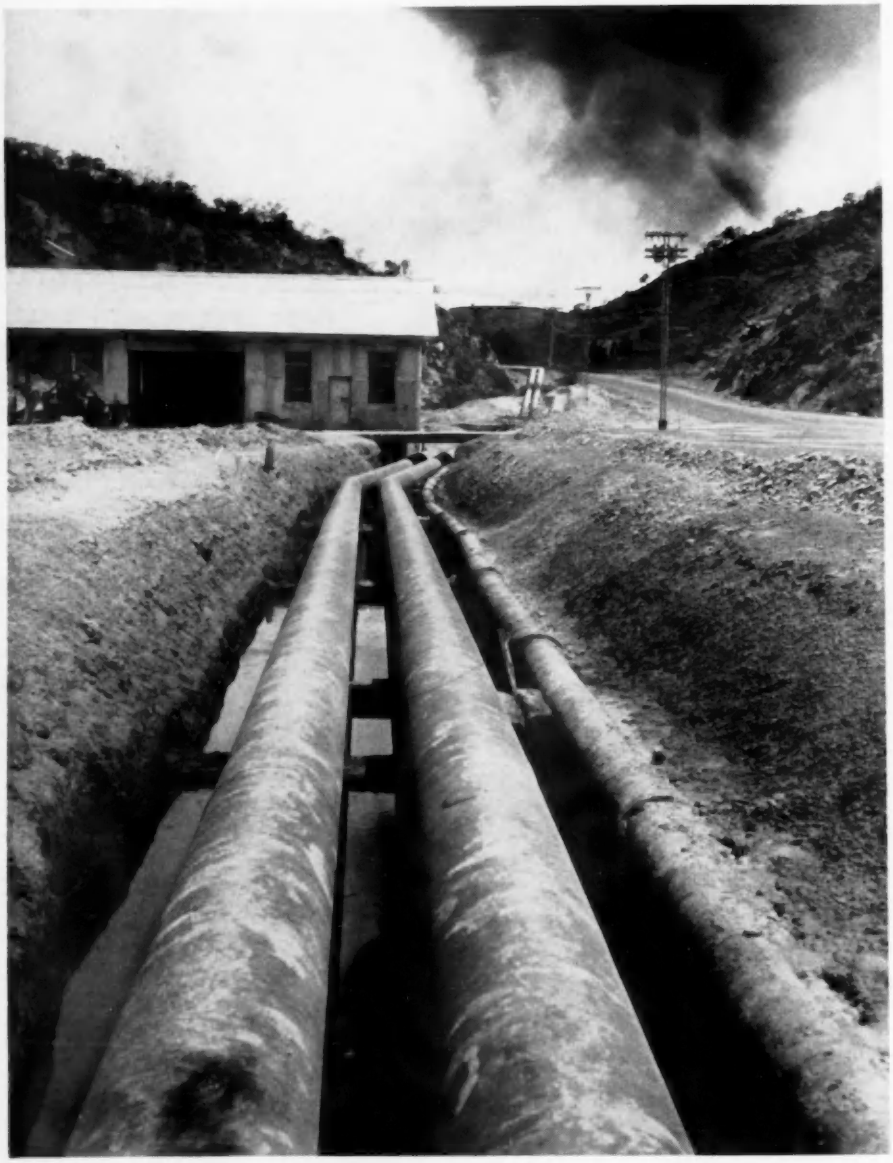
One well had already been drilled in the south central portion of the state, San Vincente 1, which was taken to 7000 feet as a stratigraphic test, with the rig having been moved to location of the presently drilling well, San Silvestre 1, now shut down for rig repairs at 7955 feet after having run electric logging survey to that depth. It will be carried deeper, according to present plans, for a complete prospect of the Miocene and Eocene formations.

Meantime, materials are being moved in for drilling the company's Yaure 1, in extreme western Barinas and almost 150 kilometers due south of the south end of Lake Maracaibo. This is also a scheduled deep test, and both rigs will be kept in constant operation in the area. The greatest problem is one of supply, there being no way in which materials can be moved in overland before completion of a road which is already under construction for part of the way, but which will require several months of dry weather for completion. Thus far all materials come in by water, a distance of more than 1000 kilometers from Cuidad Bolivar on the Orinoco River. It is possible, with completion of roads from the Oficina area to Cuidad Bolivar to lay down supplies at that point by overland transportation from the north coast instead of the tortuous route up the Orinoco, another 400-odd kilometers further to the northeast and requiring transshipment to river boats.

Socony has established a camp on the outskirts of the town of Barinas in the north central part of the state, and with this as a district base, is carrying on a geophysical program which includes operation of five geophysical crews, four of which are reflection seismograph, and one gravity meter. Three of the company's own crews are being employed, with the other two contracted.

At present, transport of personnel and a limited quantity and type of material is handled by company-owned aircraft.

Pipe Lines at Puerto la Cruz



Mene Grande Company pipe line at Puerto la Cruz, Venezuela. Three big lines terminate at this Caribbean port, a busy spot, particularly during the war years. (Photo by Vachon, Standard Oil Company [New Jersey].)

England Production

To the end of 1944 cumulative production of England's new oil field amounted to 338,541 tons of crude, having come from 242 wells, according to Sir William Fraser, chairman of Anglo-Iranian Oil Company. He described the crude to stockholders as "first class quality," providing a good base for manufacture of lubricants. He stated that production would continue for some years, although at declining rate.

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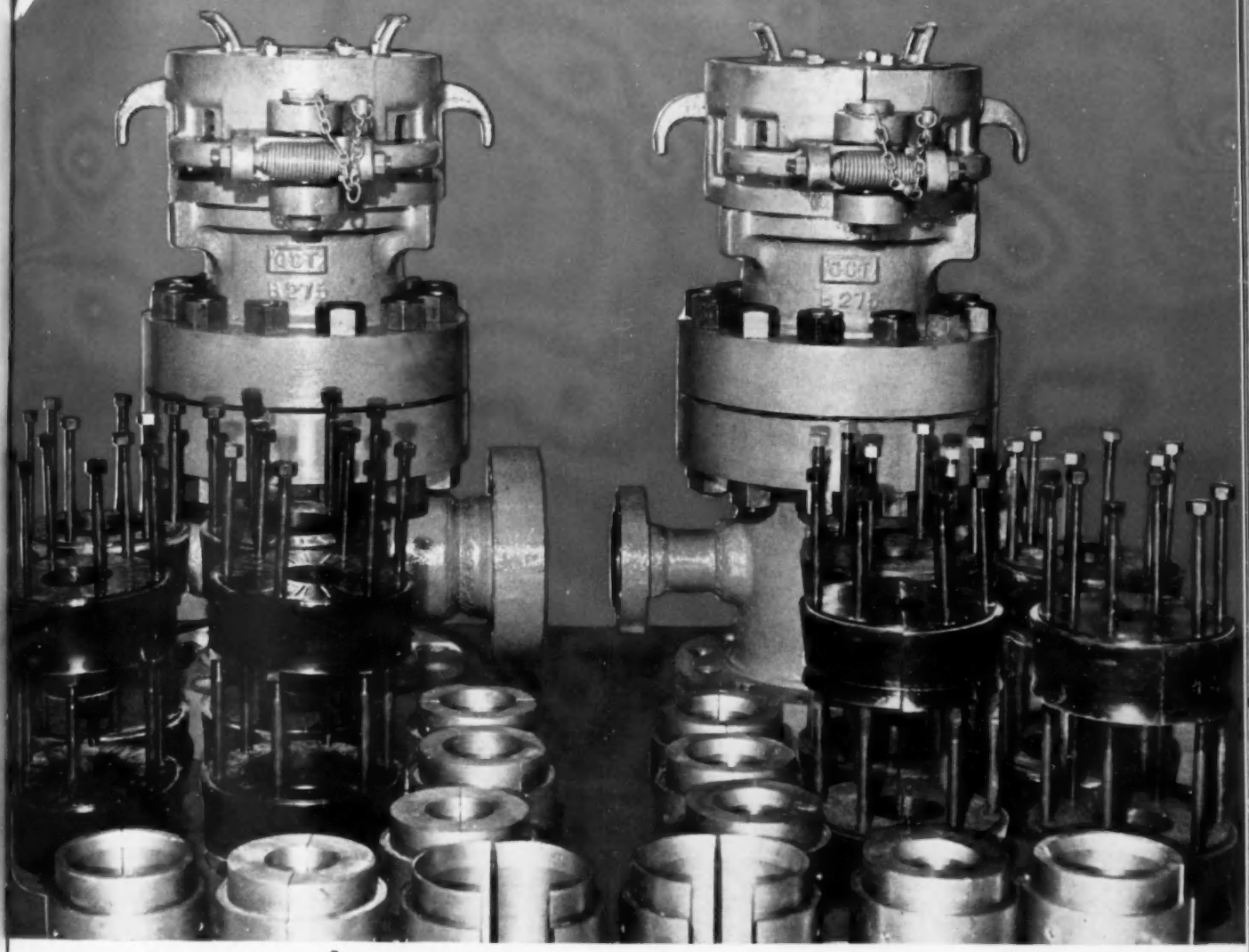

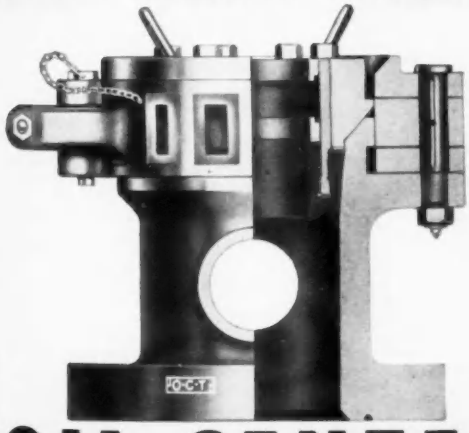

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South American Petroleum Institute Schedules Congress in January, 1947

The South American Institute of Petroleum, Montevideo, Uruguay, has announced the South American Petroleum Congress to be held in Lima, Peru, in January, 1947.

According to a statement issued by Carlos R. Vegh Garzon, president, and German E. Villar, secretary, the congress will be held principally for the purpose of studying a way to intensify oil production in South America; to consider methods that will be recommended for obtaining the maximum economy in the production and utilization of crude oil; and to examine possibilities of increasing the exchange of fuels among South American nations.

The congress also will consider the petroleum possibilities of South America with the aim of indicating the most favorable prospective regions, and will study the means of intensifying and accelerating petroleum exploration.

Another primary object, according to the statement just released, will be processes employed in South American refineries, possible improvements, and the introduction of latest United States methods developed during the war by refineries.

Other important subjects for study will be the mediums by which the crude oil of South America is transported and dispersed, and means that may be taken to increase their capacity.

Most representative figures of the oil industry are expected to attend, the statement declared.

Officers of the I.S.A.P. are studying congress rules and topics that will be considered in a reunion of the Permanent International Council of the Institute to be held next year in January at Santiago de Chile, with the aim of completing details related to the organization of the congress.

General Strike in Trinidad Is Probable in December

During the war, the oil field workers of Trinidad have kept their agreement of February, 1940, that they would not strike on a wage issue, but with the approach of the date upon which the agreement can be constitutionally terminated, all negotiations looking toward permanent unity have broken down.

A year ago labor representatives suggested renegotiation of wage scales, and a series of conferences failed because operators considered demands of labor out of line. However, the agreement is still in effect, and though strikes have been threatened the workers have continued to keep their word.

It remains to be seen just what will come of the new negotiations. Wage increases ranging up to 165 percent are being asked, and although the figures have been scaled down somewhat, it was difficult to ascertain whether a definite offer has been made by labor other than the original demands.

As it stands the companies appear unwilling to accept labor's terms and little hope has been expressed for a peaceful settlement, with every indication pointing to a general strike late in December.

Exploration Drilling Again Starts in Trinidad

Since the war-induced shortage of materials has continued Trinidad has been forced to follow a drilling policy which prevented strictly exploratory wells. It is hoped now that an exploration program will get under way as quickly as materials become available. Most oil field materials were acquired from the United States during the war, and under the necessity of developing the maximum amount of production with the minimum expenditure of steel, no locations were drilled other than those which might be expected to yield a return in production of 1000 barrels of oil in 18 months for every ton of steel expended.

Under this system, whereby each proposed location was subject to scrutiny by the Trinidad Inspector of Mines and by United States PAW, exploratory drilling was reduced to cautious step-out drilling and to some prospecting for shallower or deeper pays in known productive areas. All operators reduced the number of rigs in operation to those which were needed to maintain their production levels, and during most of the war only 14 rigs were running. There has been a gradual increase in activity since the close of the European war and there are now 17 rigs in operation, the three extra rigs being on exploratory work.

For the time being, however, British-controlled operators cannot look forward to an unlimited flow of materials, since the monetary differences between Britain and the United States, from which country most of the material other than tubular goods must come, will make it difficult for the operators to obtain American equipment. Operators momentarily are expecting to receive 4 new British rigs, but have the problem of keeping their American rigs running. About the only material which Britain can produce in any quantity is tubular goods, and they do not have alloys for manufacture of grades corresponding to American N-80 casing. The operators will have to buy the best casing available from England, a grade corresponding approximately to J-55, at a price in excess of the dollar price for N-80, simply because England at this time has not the dollars to purchase any materials which cannot be supplied by the Empire.

Saudi Arabia Production Increased by New Unit

A 25,000-barrel unit of the new refinery of the Arabian American Oil Company, owned jointly by The Texas Company and Standard Oil Company of California, located at Ras Tenura, has been placed into operation to increase the daily oil production of Saudi Arabia to 83,000 barrels.

The second unit is to be in operation before the end of 1945 to push Saudi Arabia's daily oil flow to 108,000 barrels. This 50,000-barrel daily increase will give the two companies a total refining capacity in the Persian Gulf area of the Near East of approximately 100,000 barrels daily, a gain of more than 80,000 barrels daily over the pre-war year of 1941.

Plans Made for $800,000 Refinery in Australia

Vacuum Oil Company Proprietary is working on plans, originated before the war, to erect a refinery in Australia at a cost of approximately $800,000.

London reports say the refinery will have an output of several millions of gallons annually of fuel oil, lubricating oil and bitumen. The plant will be the first of its kind in Australia, the report said, and, except for certain specialized equipment, all material would be made in Australia.

Nazis Get 20,000 Barrels Daily Austrian Production

Reports reaching the United States from Austria indicate that crude oil production in Austria under the Nazi control of that country had exceeded 20,000 barrels per day before the close of the war.

American companies having oil properties there have been advised in an unofficial manner that their producing properties are in fair condition although no details have been made available.

While the Germans greatly expanded production in Austria after taking over the country in March, 1938, they deserve no special credit for the achievement. For the important Zistersdorf field, about 35 miles north of Vienna, had been established previously by Austrian, American, and British interests, and its value was then recognized. On the contrary, it is indicated that the Germans may have materially damaged the field by overproducing it. That course was taken because Germany badly needed the lubricants and gas oil, principal products yielded in refining the crude. Good flowing production was available by drilling wells.

It is reported that soon after the German entry, the Zistersdorf field was extended 6 miles, proving up a large area.

Reports on production under the Germans were not available, but data from various sources confirm a large and steady increase in output. The Austrian production eventually came to represent a substantial part of Germany's source of crude petroleum.

The trend of Austrian production shows in an accompanying table:

Production of Crude Oil in Austria
(From P. I. W. C. Report of May, 16, 1945)

YEAR	Barrels During Year	Barrels Daily
1934	28,000	77
1935	44,000	120
1936	50,000	136
1937	221,000	606
1938	383,000	1,049
1939	693,000	1,899
1940	719,000	1,964
1941	692,000	1,896
1942	3,800,000	10,411
1943	7,820,000	21,425
1944	9,760,000	26,667

Busy Lake Maracaibo, Venezuela, Pictured Through Palms

Lake Maracaibo shore line, Western Venezuela. (Photo by Vachon, Standard Oil Company [New Jersey].)

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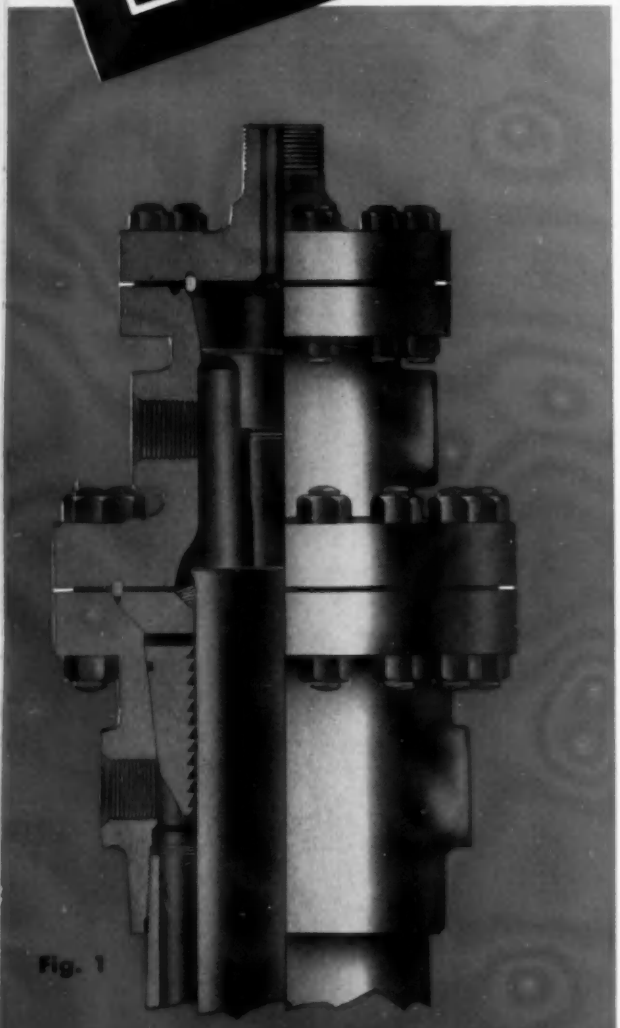

Fig. 1

This 1000# working pressure RECTORHEAD is engineered to give you the same efficient performance and safety for the operator as the popular high pressure RECTORHEADS. It makes possible the equipping of your lower pressure wells with API full bore flanges with positive assurance against leaks . . . WITHOUT THE USE OF RUBBER, COMPOSITION, OR OTHER PACKING THAT WILL DETERIORATE.

Figure 1 is the type 4RH casing head and the 4M tubing head. The 4RH casing head features slip suspension of the pipe with welded seal above and use of standard dimension API ring, thus eliminating all packing. As with all RECTOR welded hangers, the welding ring is allowed to "float" during the welding operation, thus insuring a stress-free weld.

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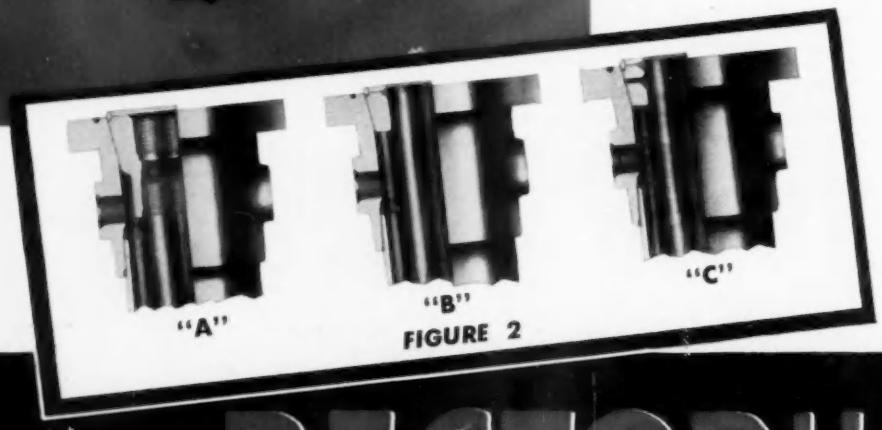

FIGURE 2

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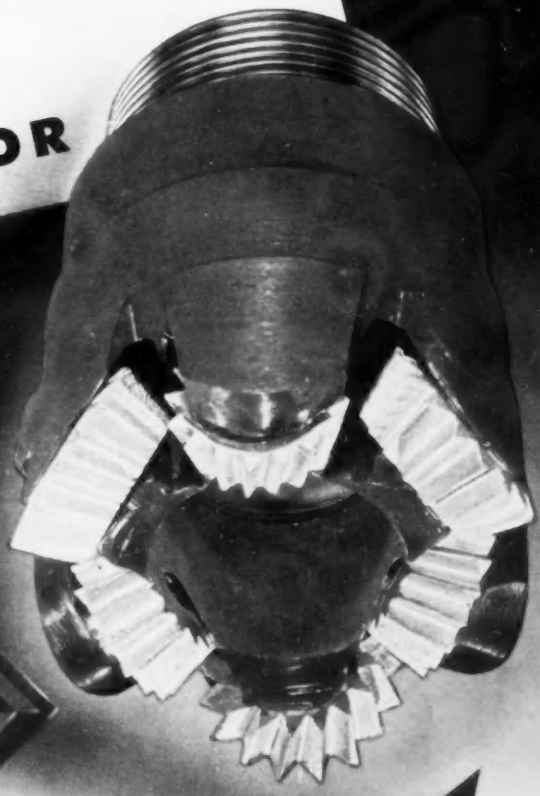

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CENTS PER COPY — November 26, 1945 — VOLUME 119, NUMBER 13

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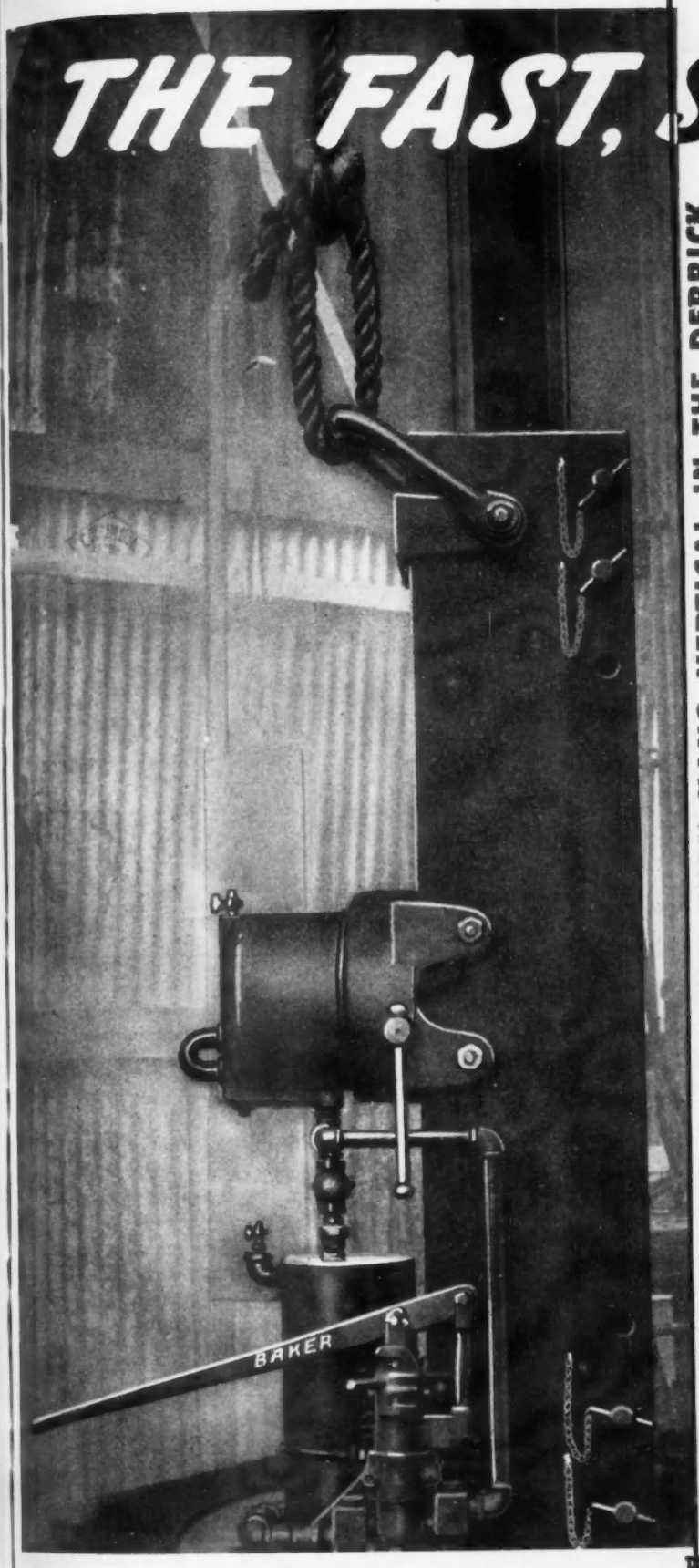

DRILL COLLARS AND KELLY WHEN THEY HANG VERTICAL IN THE DERRICK

TO STRAIGHTEN BENT KELLYS, AND ALL TYPES OF PIPE, IS... WHILE THEY ARE SUSPENDED IN THE DERRICK

using a BAKER PORTABLE HYDRAULIC KELLY STRAIGHTENER

THIS highly efficient and easily operated device utilizes the principle of the hydraulic ram, applying the force built up by a manually operated pump to the bend in the Kelly, drill collar or drill pipe AS IT HANGS SUSPENDED IN THE DERRICK.

Probably more Kellys are bent during transportation, and in being laid down and picked up, than any other cause. Frequently a Kelly that has just been straightened in a shop will again be bent during the process of transporting it back to the well, rolling it off the truck, and dragging it into the rig.

EASY TO STRAIGHTEN IN THE DERRICK

When the Baker Kelly Straightener is used, the job is done RIGHT ON THE ROTARY TABLE with the Kelly hanging in its normal position. The hazards, the loss of time, and the expense of transporting and handling are entirely eliminated. In foreign or isolated fields the Baker Kelly Straightener is considered indispensable as the cost and loss of time in transporting a bent Kelly or drill pipe to and from a distant shop are serious matters.

An important feature of the Baker Hydraulic Kelly and Pipe Straightener is the fact that it is completely portable, the entire unit weighing only 1,200 pounds. It can be transported readily on a small pick up truck, or a trailer, and by means of the cat line is quickly set up on the rotary table ready for successful operation by following simple instructions.

Pressure sufficient to straighten 8¼" diameter Kellys or drill pipe can be built up without undue exertion, by manual operation of the hydraulic pump. It is safe to use, and the only parts subjected to wear are inexpensive and readily replaceable—the body and pump will last indefinitely.

Ask for details and prices on this efficient device which quickly pays for itself and then pays dividends for a long, long time.

BAKER OIL TOOLS, INC.

Houston — Los Angeles — New York

IT'S EASY TO STRAIGHTEN DRILL PIPE

BAKER PORTABLE HYDRAULIC STRAIGHTENER

AEROFLO...QUADRAFOS...

"WITH THEIR HELP WE NOW HAVE THE SITUATION WELL IN HAND"...SAYS "GENERAL" MUD

With deeper drilling the order of the day, keeping drilling mud under control at all times *and at all points* from bit to surface demands careful planning—and *reliable* mud conditioning chemicals. QUADRAFOS*sodium tetraphosphate and AEROFLO* mud conditioning compounds have proven their efficiency for this purpose over and over in all types of drilling conditions. They can be depended on to meet practically any situation in both domestic and foreign fields.

QUADRAFOS offers special advantages. It maintains fluidity even with high concentrations of colloidal material... helps to assure low water loss and moderate gel strength. It dissolves easily in water and is well adapted to field use.

AEROFLO is excellent for use under difficult conditions and in deep wells. It increases the efficiency of phosphates in salt cut muds, in muds that do not respond to regular chemical treatment, and where high temperatures cause rapid thickening. It improves elimination of sand with or without special equipment.

BOTH QUADRAFOS and AEROFLO are manufactured in large volume with modern equipment under careful control...and are available for immediate delivery from distributors in all the principal oil drilling centers of the U. S. A. For complete information and technical assistance write, phone or wire American Cyanamid & Chemical Corp., 229 Shell Bldg., Houston, Tex., or Azusa, Calif.

*Reg. U. S. Pat. Off.

†QUADRAFOS and ‡AEROFLO are available for immediate delivery from stocks kept by many Drilling Mud Chemical Distributing Houses in all principal Oil Well Drilling Centers in the United States.

‡AMERICAN CYANAMID & CHEMICAL CORPORATION
(Manufacturer and Selling Agent)

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THE OIL WEEKLY, published every Monday. Entered as second class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879.

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The General American tank cars built specifically for you will have the same reliable characteristics that have been proven during war and peace.

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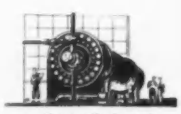
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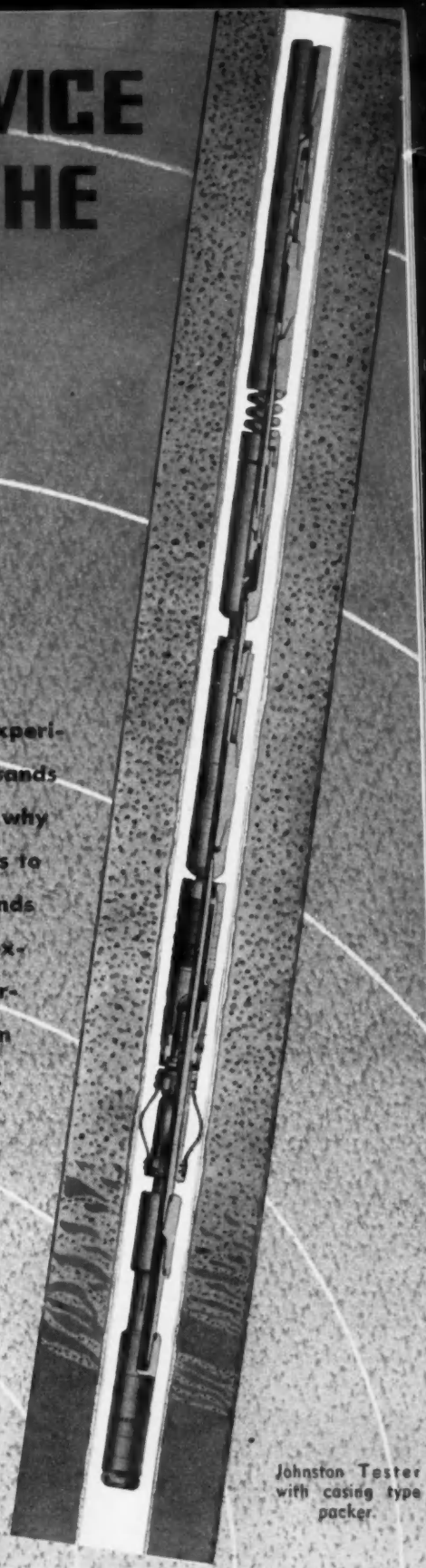
Johnston Testing Service reflects the experience gained in successfully testing thousands of wells throughout the world. This is why oil men everywhere use Johnston tests to show the productive possibilities of sands encountered in drilling without the expense of setting casing, or to determine gas-oil ratios and production possibilities after casing is set. For the ultimate in testing accuracy, safety and reliability always call JOHNSTON. A trained representative is near at hand to serve you.

Johnston Formation Tester with open hole packer



Johnston Tester with casing type packer.

FORMATION AND CASING TESTING

JOHNSTON

JOHNSTON OIL FIELD SERVICE CORPORATION

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Representatives at these convenient points: TEXAS—Alice - Houston - Odessa - Victoria - LOUISIANA—Houma - Lake Charles - Shreveport - ARKANSAS—Magnolia - MISSISSIPPI—Laurel - Yazoo City

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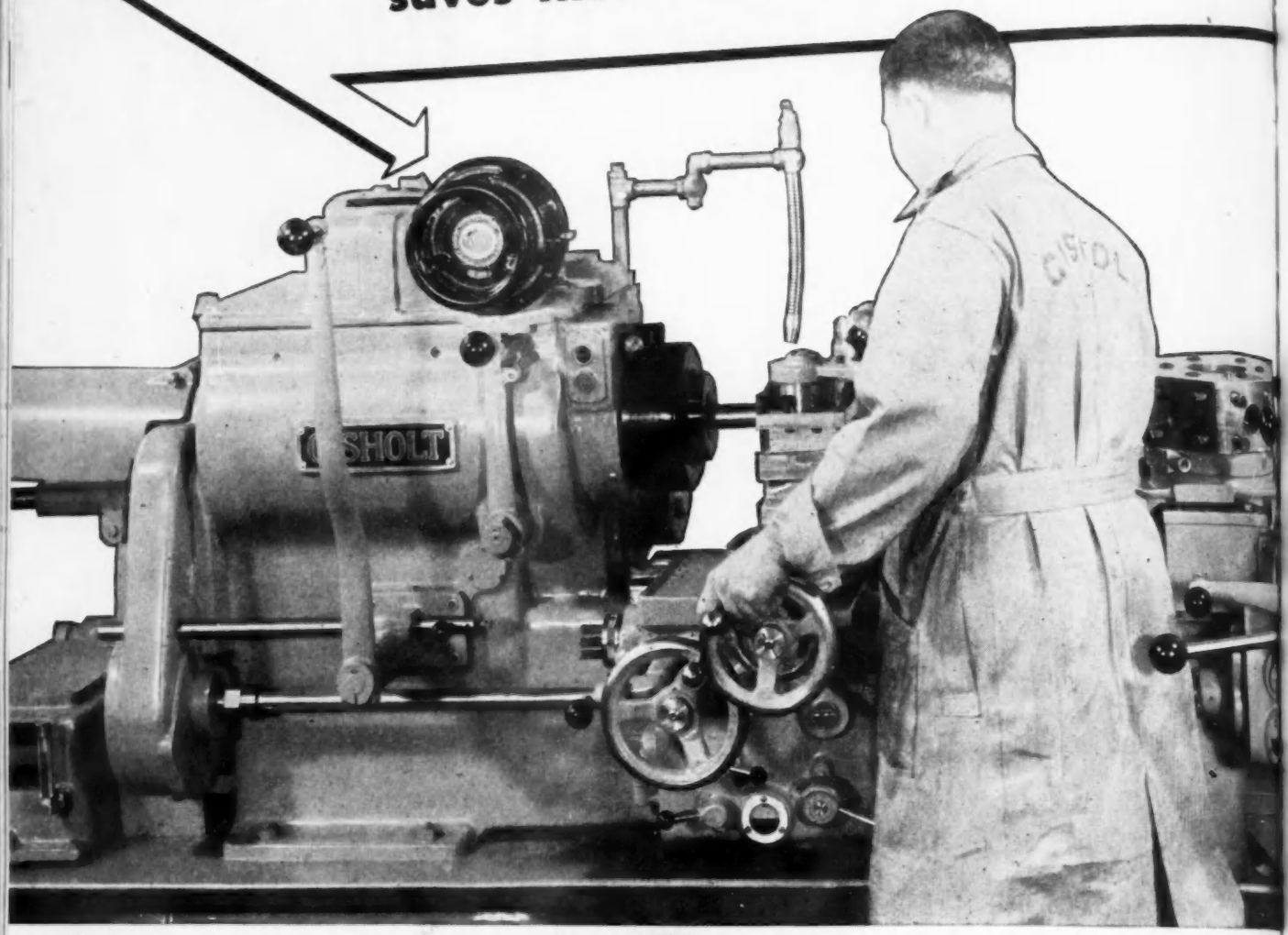
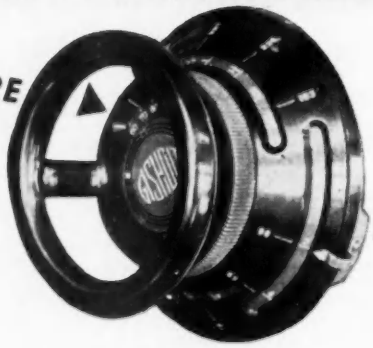
How the GISHOLT HYDRAULIC SPEED SELECTOR saves time and trouble . . .



SET CUTTING SPEED HERE



SELECT DIAMETERS HERE

There is a "best" cutting speed for machining with every combination of material and tool. Set that cutting speed here by turning the knurled ring.

The operator merely turns the handwheel to the diameter of each successive cut. The Selector automatically shifts to the proper spindle speed.

The Gisholt Speed Selector is power-operated. Actual shifts are made instantly to any one of 12 spindle speeds, making it easier for the operator always to use the most efficient cutting speed for the work at hand. There are no time-wasting calculations—no complicated adjustments. And no physical effort is required of the operator.

Actuated by a mere touch to the wheel, the Speed Selector functions automatically, leaving the operator free to index turret and present new tools to the work, eliminating the waste of operator time between cuts.

The Gisholt Speed Selector increases production—helps to improve the quality of machining work. Write for literature.

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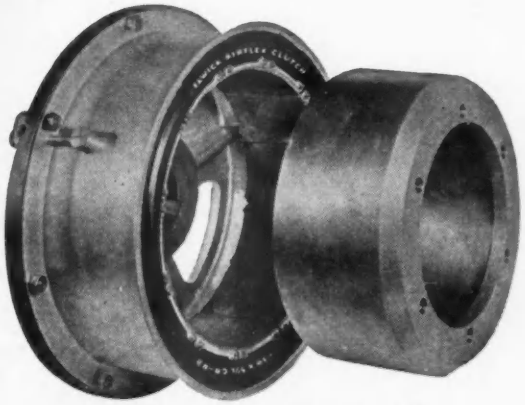
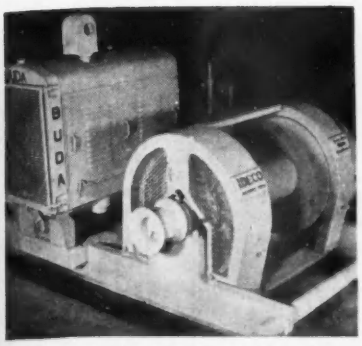
GISHOLT

TURRET LATHES • AUTOMATIC LATHES • BALANCING MACHINES • SPECIAL MACHINES

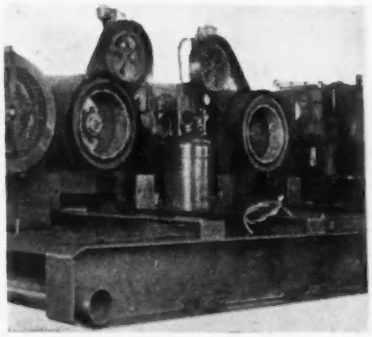
THE CLUTCH THAT SAVES YOU MONEY



Clutch element assembly with spider.



Ideco service winch with Fawick Clutch for drum drive.



Emsco draw works equipped with Fawick Clutches.

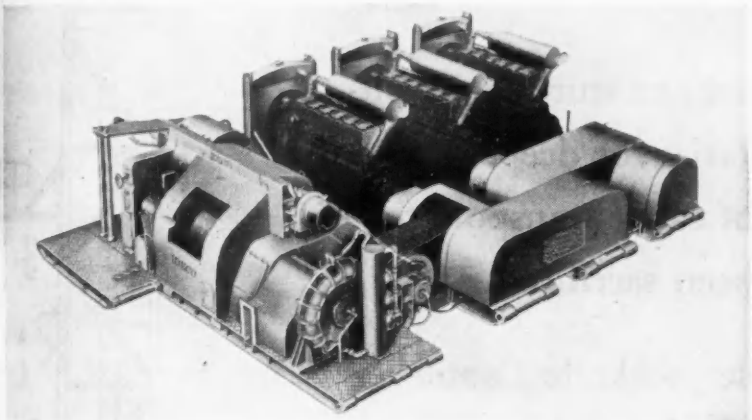
The Fawick Airflex Clutch eliminates down time because it needs no adjustment, no lubrication, no frequent replacements and repairs. It controls torque, absorbs shocks and transmits power through a cushion of air.

Grips like a tire grips the road—light or firm engagement—without springs, arms or levers.

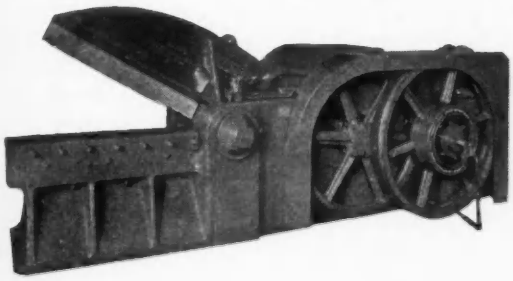
Economy and dependable performance proved on thousands of Navy ships and in hundreds of different industrial applications—for heavy-duty drives wherever the going is tough.

* * *

Tell us the conditions your equipment has to meet in operation—We'll gladly recommend the clutch best suited to the job and show you how it should be engineered. Book on request.



▲ Ideco draw works, Fawick equipped throughout - - 11 clutches in this assembly.



◀ Alligator shear operating through Fawick Clutch and Brake.

▶ Power hoist equipped with Fawick Clutches and Brake.

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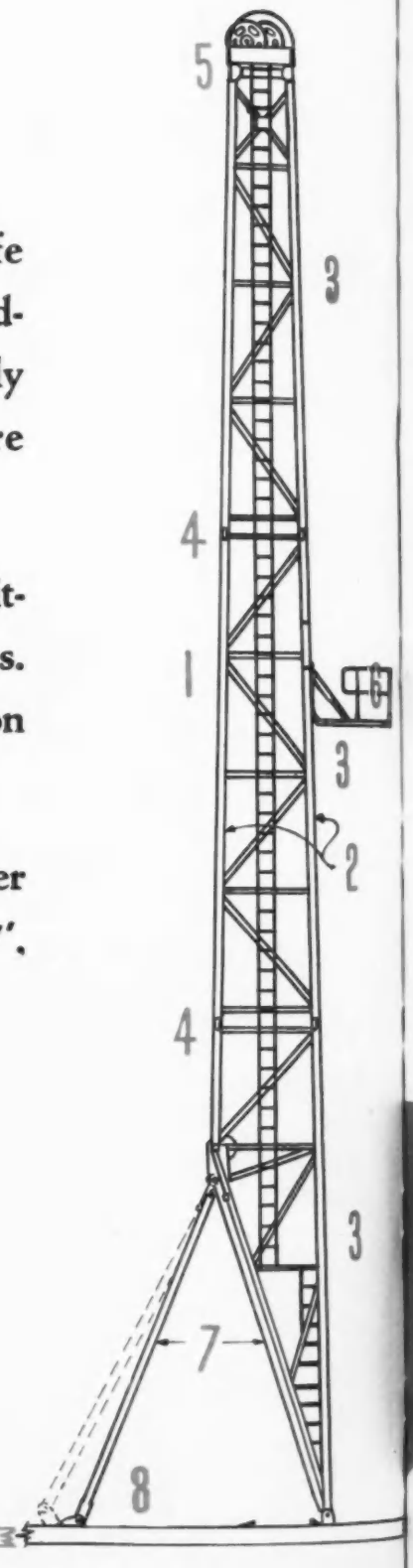
Moore LARGER and E

The improved Lee C. Moore portable Jackknife Cantilever Drilling Mast offers additional advantages: Increased Heights — Fewer Assembly Operations — Greater Clearance and More Adaptability.

The masts are larger, heavier and sturdier permitting the use of heavier rotaries for deeper holes. Yet none of the features of easier transportation and quick erection have been sacrificed.

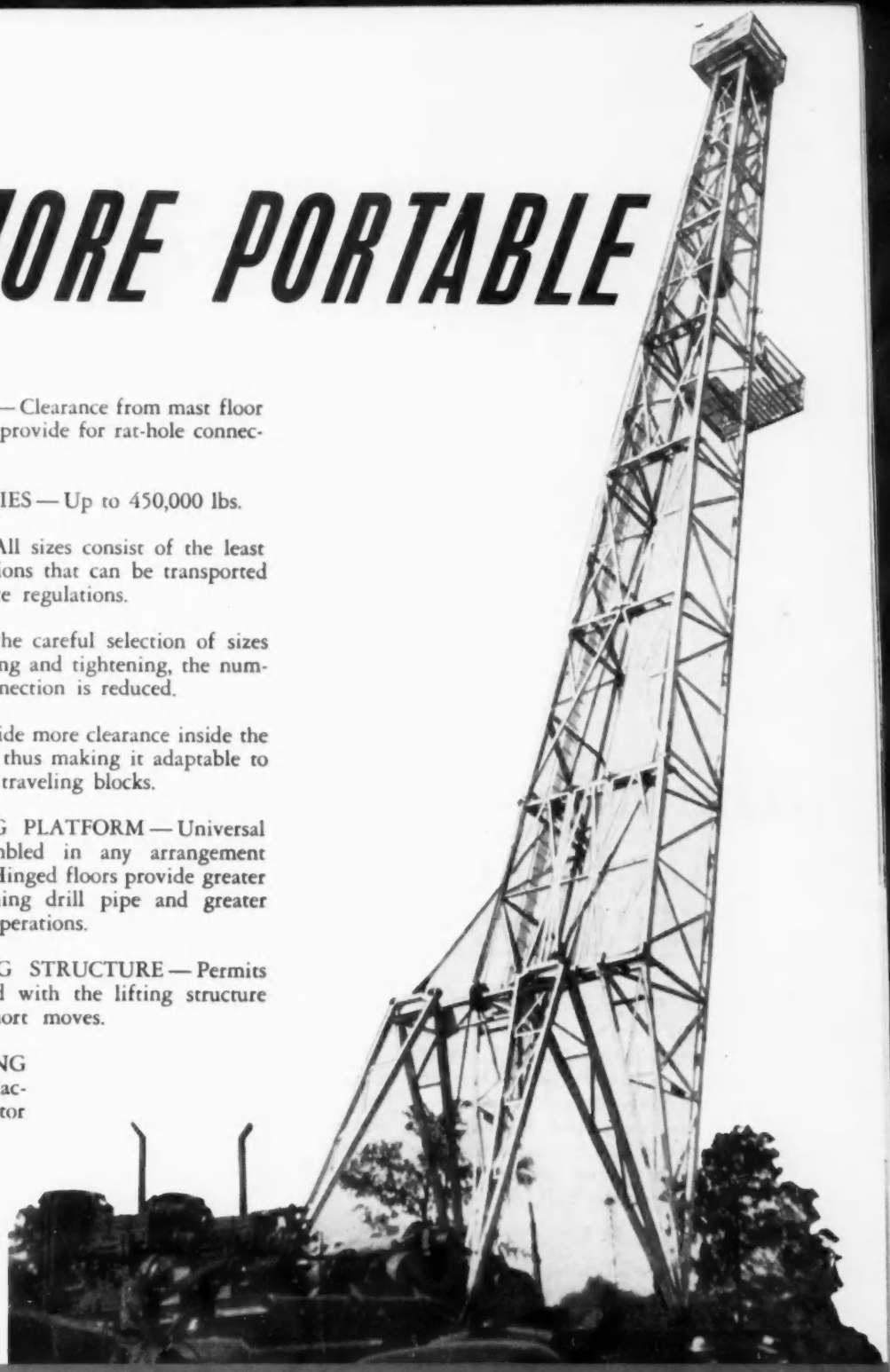
The Lee C. Moore portable Jackknife Cantilever Mast for rotary drilling is now available in 87′, 95′, 98′ and 127′ sizes.

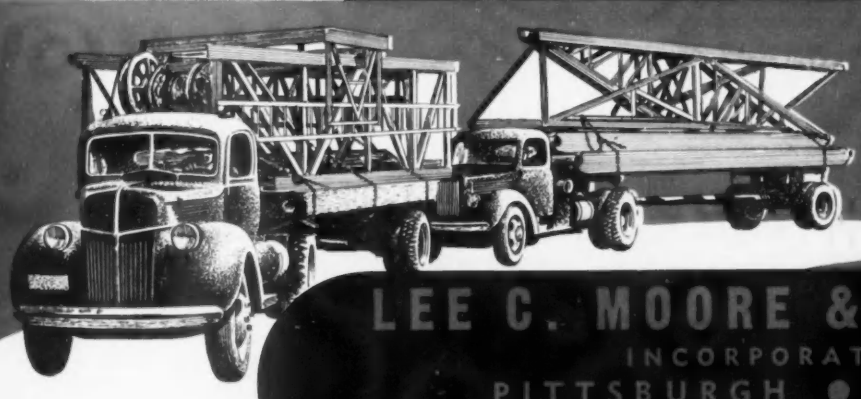
SIZE	CAPACITY
87′ x 12′	300,000 lbs.
95′ x 12′ 6″	360,000 lbs.
98′ x 15′	450,000 lbs.
127′ x 15′	450,000 lbs.



EVEN MORE PORTABLE

1. INCREASED HEIGHT — Clearance from mast floor to crown is increased to provide for rat-hole connection on doubles mast.
2. INCREASED CAPACITIES — Up to 450,000 lbs.
3. FEWER SECTIONS — All sizes consist of the least possible number of sections that can be transported within highway clearance regulations.
4. FEWER BOLTS — By the careful selection of sizes regarding ease of inserting and tightening, the number of bolts at each connection is reduced.
5. LARGER TOPS — Provide more clearance inside the top section of the mast, thus making it adaptable to an even larger range of traveling blocks.
6. IMPROVED RACKING PLATFORM — Universal in that it can be assembled in any arrangement desired by the operator. Hinged floors provide greater convenience when running drill pipe and greater clearance during other operations.
7. REMOVABLE LIFTING STRUCTURE — Permits the mast to be removed with the lifting structure remaining erect; for short moves.
8. ADJUSTABLE BEARING PLATES—Without replacing any parts the operator can adjust space between the front and rear mast legs, thus providing ample clearance for any unitized draw works and power.





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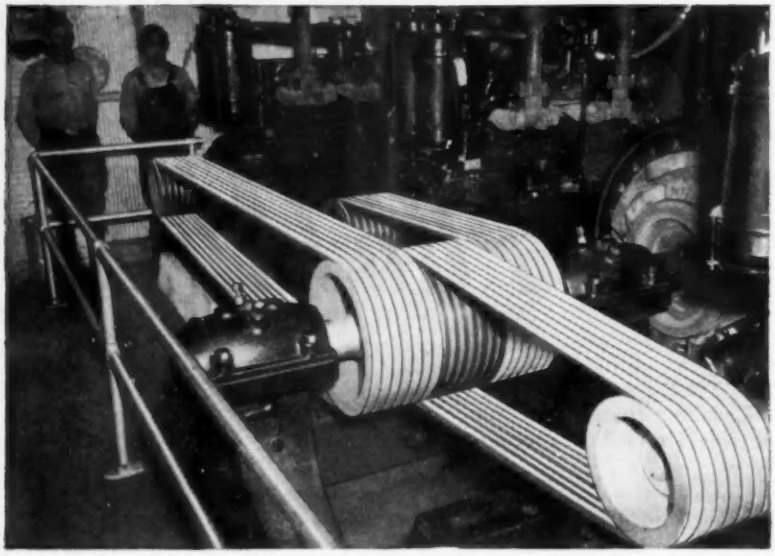

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Early in the war, it became perfectly clear that Army tanks, tractors and self-propelled big guns in *combat service* simply *had* to have V-Belts of greater strength and durability than had ever been built before. Gates developed these greatly superior V-belts through intensified, specialized research — and here is why this fact is now important to YOU:——

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Here is one of the very few instances in which improvements developed primarily for military use could be passed on *immediately* to you. Ordinarily, *you* would have had to wait. An exception was made in the case of Gates V-belts because it was recognized that industry needed the best possible V-belts in order to achieve the greatest possible production—and maximum production was vitally essential.

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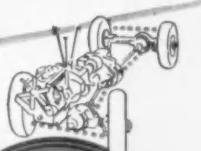

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Oil-field operations make heavy demands on men and equipment. Motor trucks particularly are expected to stand up under exceptionally tough duty — get men and heavy equipment through to location, regardless of weather and without benefit of paved highways.

Oil-field operations are a "natural" for FWD four or six-wheel drive trucks. Power on all wheels — controlled by the FWD center differential — gives these trucks the extra push to get through over the roughest terrain and in the most severe weather. With every wheel a live puller the hauling power is there — oil men know FWDs are dependable "prime movers."

Write for literature and complete information on the complete FWD line of four and six-wheel drive trucks for oil-field service.

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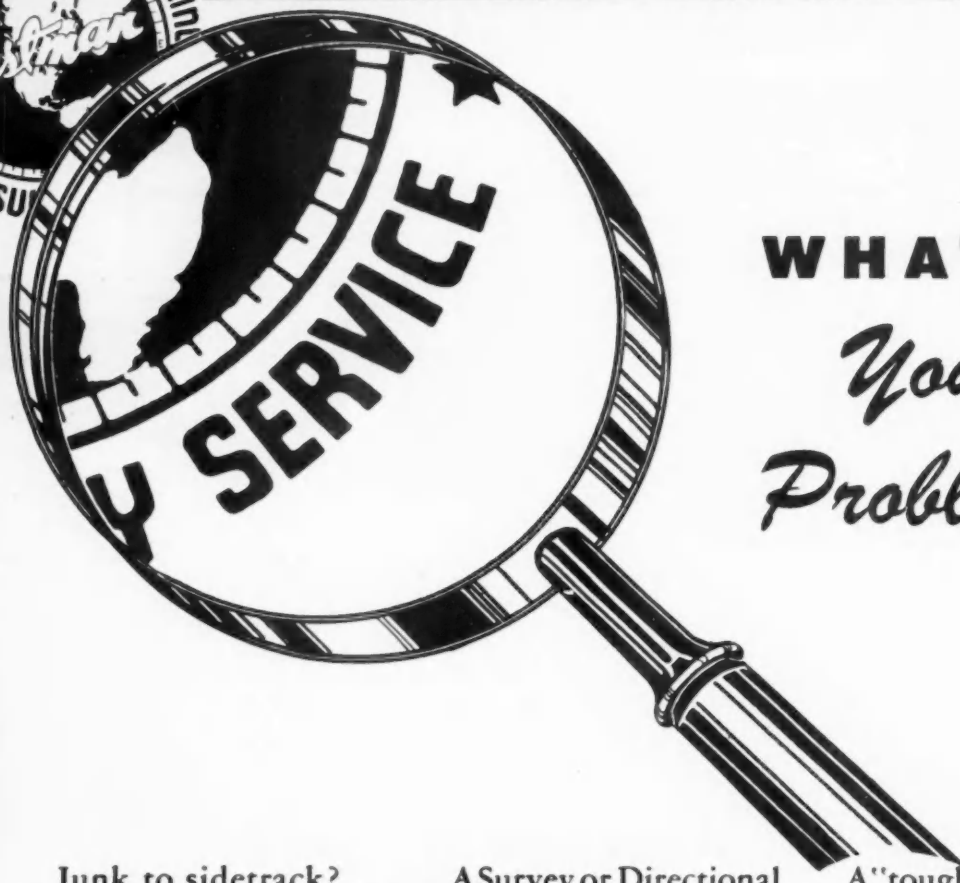

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Junk to sidetrack?
A hole to straighten?
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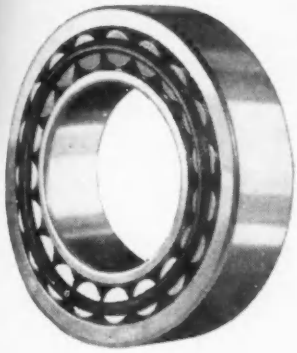

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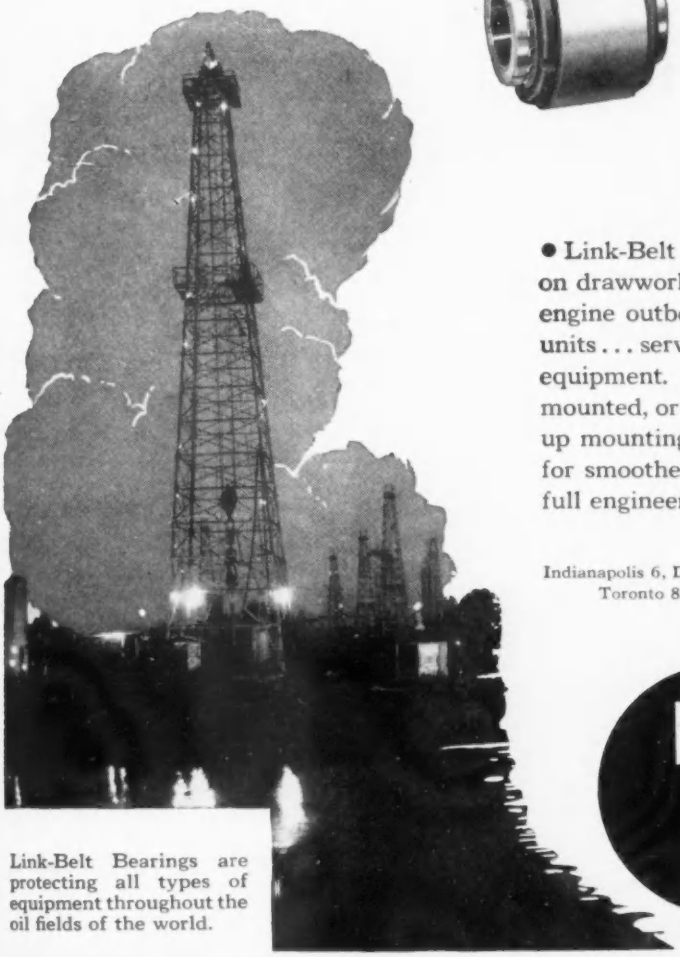
✓ ROLLING SMOOTHER
✓ LASTING LONGER

with LINK-BELT BALL and ROLLER BEARINGS



Link-Belt Bearings are protecting all types of equipment throughout the oil fields of the world.

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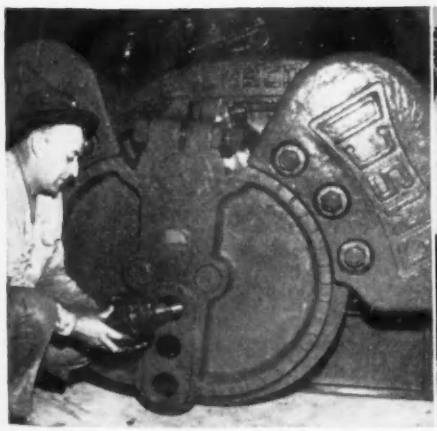
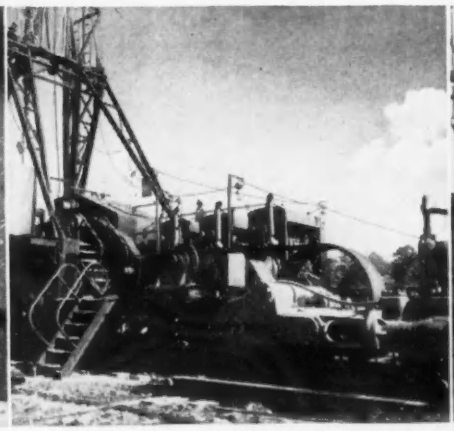
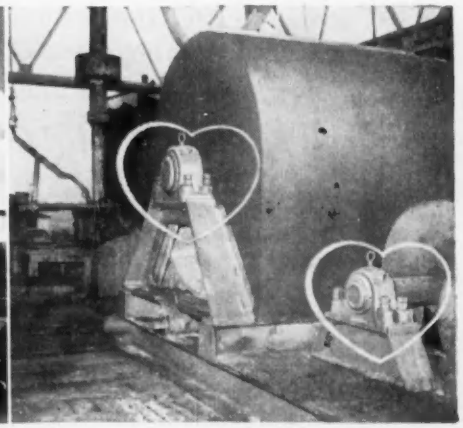
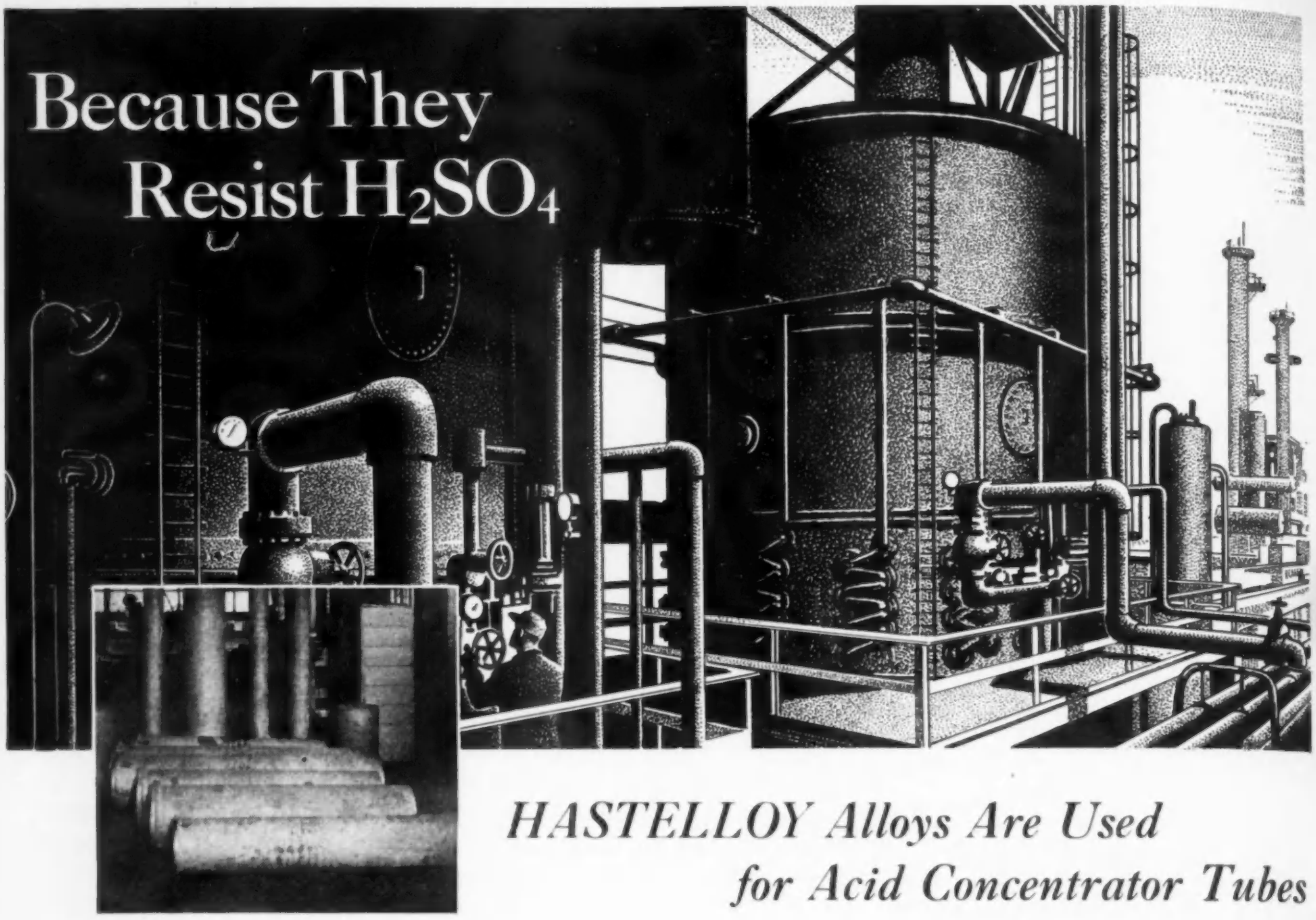
LINK-BELT BALL AND ROLLER BEARINGS







Because They Resist H_2SO_4



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Equipment used for concentrating sulphuric acid must have extreme corrosion resistance to withstand the hot acid as it progresses from the dilute to the final highly concentrated form.

The excellent acid resistance that makes this HASTELLOY alloy so valuable here is also important in other applications where severe conditions of corrosion are encountered.

If you have a job that requires a strong, tough, corrosion-resistant metal, consider a HASTELLOY alloy. The slightly higher initial cost will be more than repaid by the durability of this material. Our engineers can give you further information on how to use these alloys economically and efficiently. Write for the "HASTELLOY Alloys Price List."

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Some of the Advantages of HASTELLOY Alloys

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2. Resistance to sulphuric acid, cold or hot, dilute or concentrated.
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4. Resistance to abrasion and wear.
5. High strength and toughness.
6. Available forms — castings, welding rod, mill forms, or fabricated equipment.

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ARMY E NAVY

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To meet your
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any pressure
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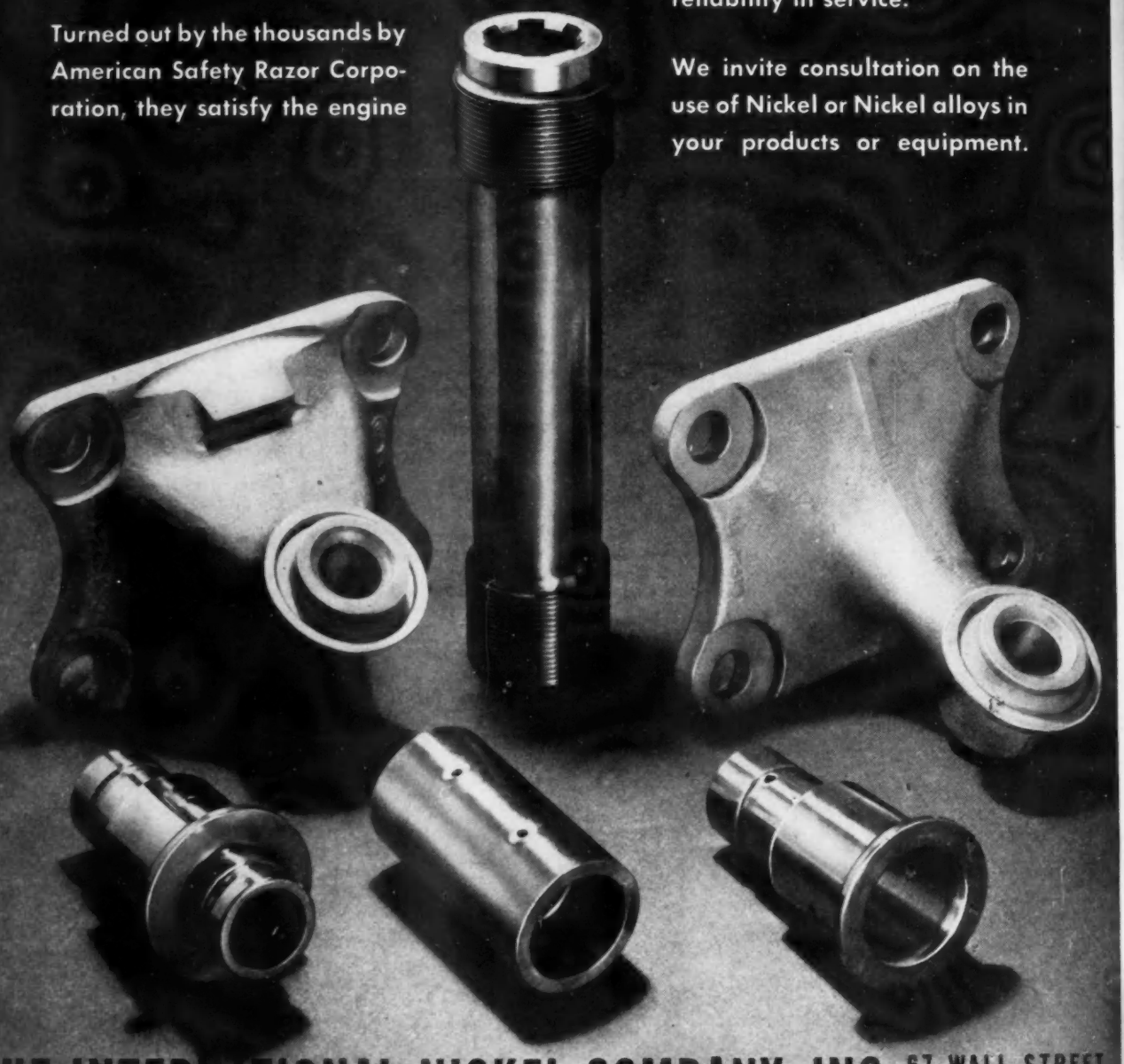
Turned out by the thousands by American Safety Razor Corporation, they satisfy the engine builders' demands for high mechanical properties, minimum distortion after heat treatment, close tolerances and thorough reliability in service.

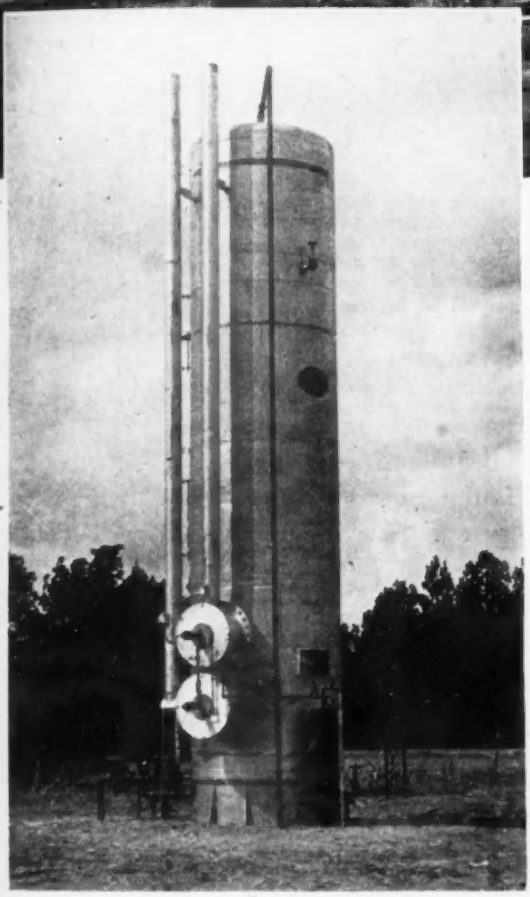
We invite consultation on the use of Nickel or Nickel alloys in your products or equipment.



THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET NEW YORK 5, N. Y.

HEAT TREATING

EFFICIENTLY • DEPENDABLY • ECONOMICALLY



The Parkersburg Self-Insulating Treater eliminates need for separator, settling tank and heater. Ask for details.

The Parkersburg Immersion Type Horizontal Heater is the Industry's most modern method of converting the flow of crude oil from the separator to pipe line oil in your stock tanks. Its exclusive design employs a combination of radiation and convection heat transfer so as to insure uniform heating surface temperature and a minimum of deposits on the heating surface. Hot spots and large channeling volumes are eliminated. Combustion chamber and heat transfer tube are free to expand lengthwise. It is easier to assemble, dismantle and clean. Lighter weight and skid mounting makes easier hauling and installing. Your Parkersburg Representative will gladly furnish full details.

THE PARKERSBURG RIG & REEL CO.

PARKERSBURG & OCS PRODUCTS

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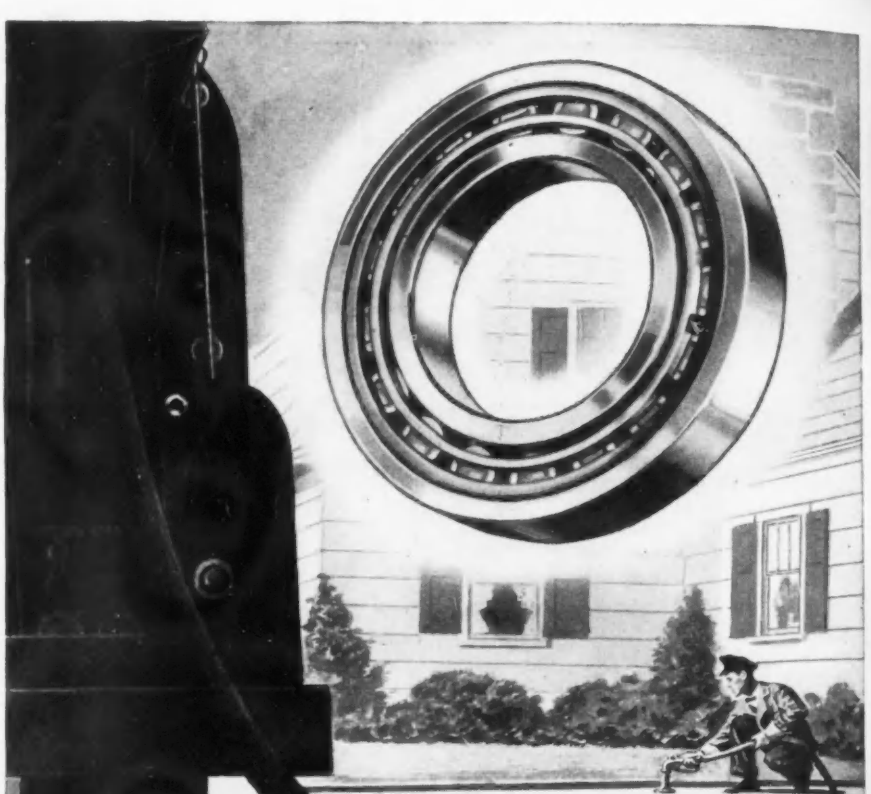
Rollers Roll



FROM DEEP DRILLING TO HOME DELIVERY!

The petroleum business and Hyatt Roller Bearings have grown up together.

As you know, from everyday experience, drilling and pumping machinery equipped with Hyatt Roller Bearings has had some tough tasks to perform day after day through the years.

And Hyatt's have measured up to the most exacting performance demands.

Wherever oil producing machinery operates, there you will find a preponderance of Hyatt's minimizing friction—keeping wheels, shafts and gears turning day in and out performing steadily with a minimum stoppage for bearing care or replacement. Hyatts see the job through via Hyatt-equipped tank trucks, right to the home owner's door. Hyatt engineers have a wealth of experience in the petroleum field—consultation is invited.

HYATT BEARINGS DIVISION • GENERAL MOTORS CORPORATION

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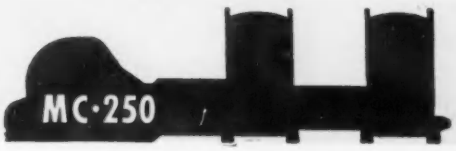
HYATT ROLLER BEARINGS

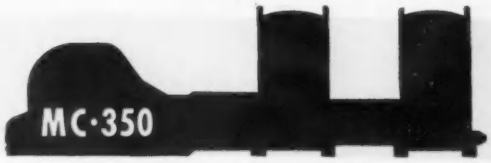
O NEED TO BUY
OO SMALL A RIG

Bethlehem makes a size for every depth

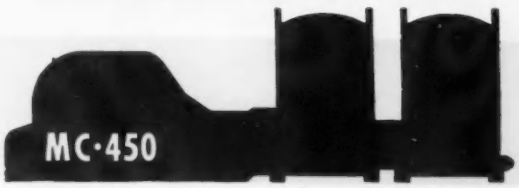
4,500 ft.



6,500 ft.

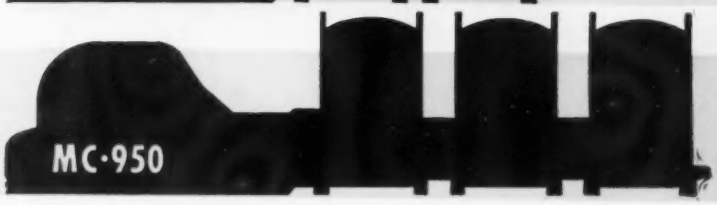


8,500 ft.



11,000 ft.

15,000 ft.



Ratings based on 4½-in. drill pipe. Correspondingly greater depths with smaller pipe.

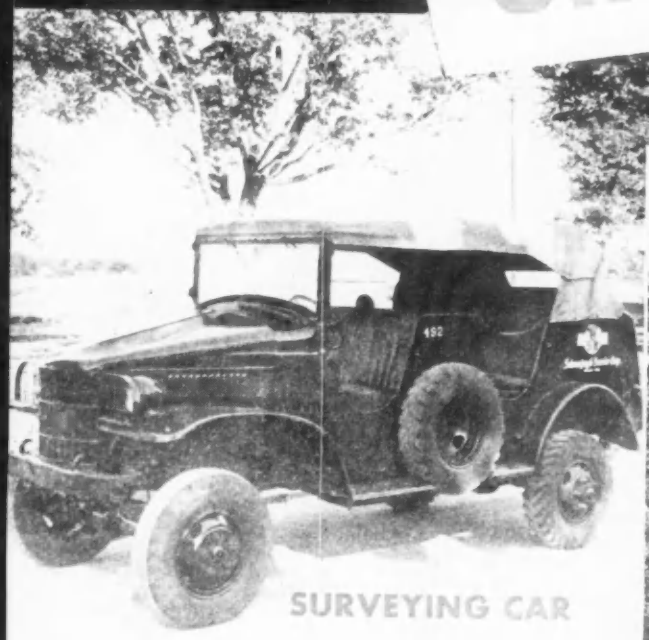
BETHLEHEM STEEL

BETHLEHEM SUPPLY COMPANY

Subsidiary of Bethlehem Steel Corporation

Bethlehem Supply Offices or Stores: **Arkansas**—Magnolia; **Colorado**—Craig; **Illinois**—Grayville, Salem; **Kansas**—Chase, Great Bend, Pratt, Russell, *Wichita; **Louisiana**—Harvey, Houma, Lake Charles, New Iberia, Shreveport; **Mississippi**—Laurel; **New Mexico**—Artesia, Hobbs; **Oklahoma**—Oklahoma City, *Ponca City, Seminole, Tulsa, Wewoka; **Texas**—Alice, *Amarillo, *Beaumont, Borger, Bowie, Corpus Christi, *Corsicana, *Dallas, *Fort Worth, Graham, Houston, Kermit, Kilgore, La Ward, McAllen, Odessa, Pampa, *San Antonio, Sundown, Wichita Falls, Winnsboro. (**Office only.*)

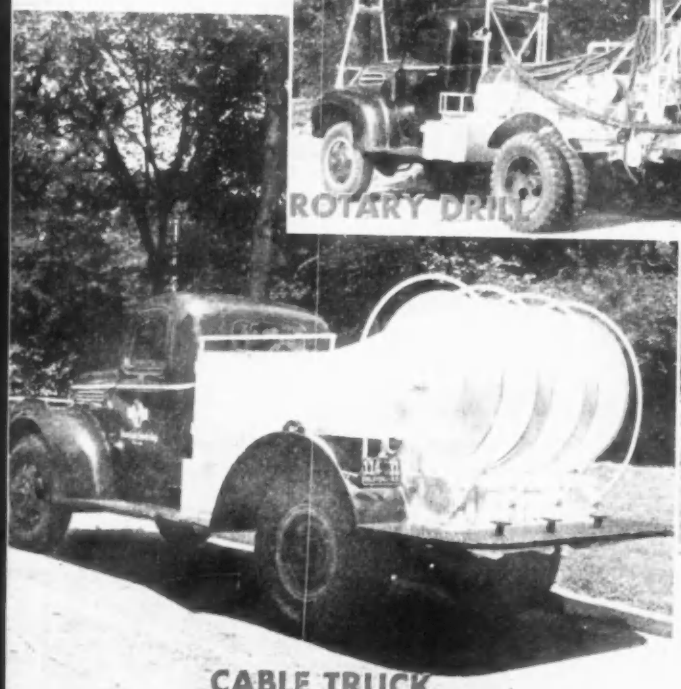
EQUIPMENT USED IN REVEALING Oil For Tomorrow



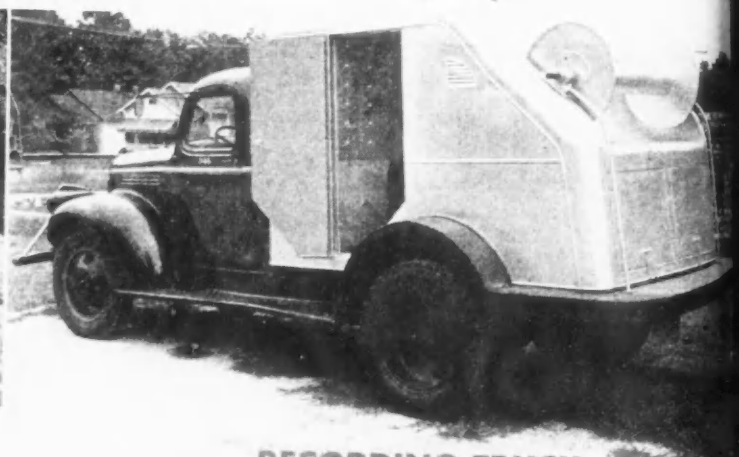
SURVEYING CAR

SHOOTING TRUCK

ROTARY DRILL



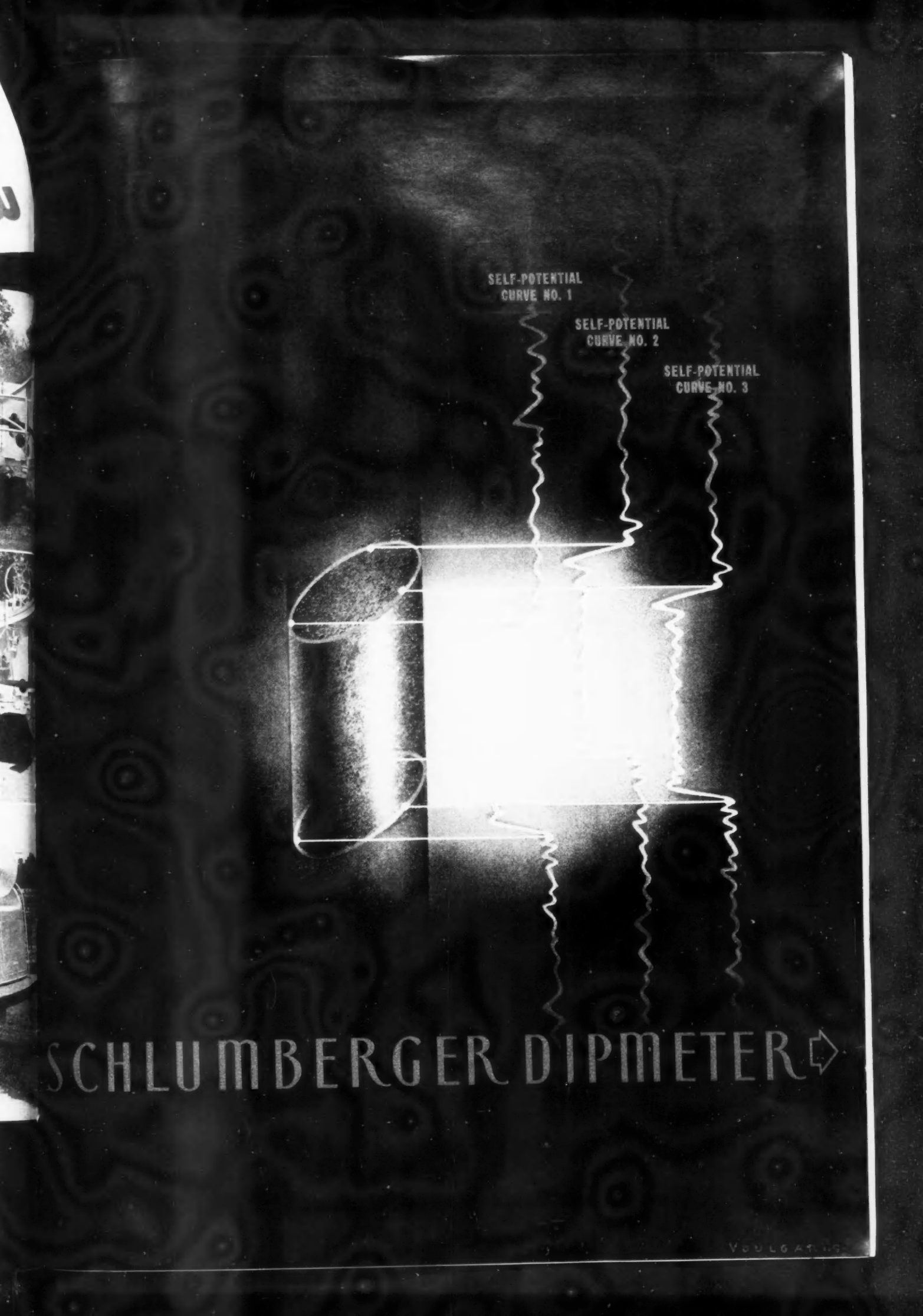
CABLE TRUCK



RECORDING TRUCK

Seismograph Service Corporation

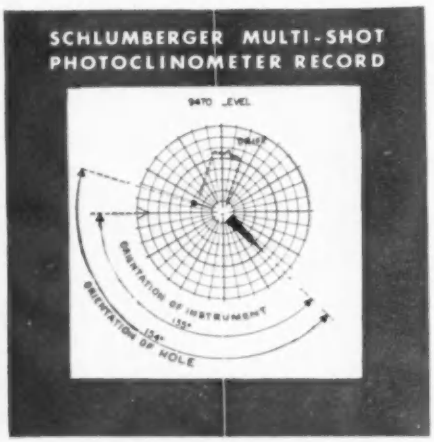
TULSA, OKLAHOMA, U. S. A.


SELF-POTENTIAL
CURVE NO. 1
SELF-POTENTIAL
CURVE NO. 2
SELF-POTENTIAL
CURVE NO. 3
SCHLUMBERGER DIPMETER

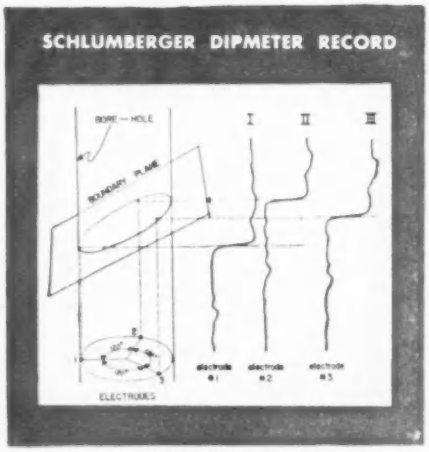
SCHLUMBERGER DIPMETER

PROVIDES QUICK, ACCURATE DETERMINATION OF DIRECTION AND VALUE OF FORMATION DIP

With the same high degree of accuracy that has distinguished Schlumberger Electrical Well Logging, you may now determine formation dip and direction values. The Dipmeter combines two proven Schlumberger services — electrical well logging and photoclinometer directional surveys. The instruments are lowered into the hole on a



standard Schlumberger cable, requiring only one trip in the well for the entire Dipmeter Survey. Simultaneous recordings are made of the drift and orientation of the well bore, the orientation of the instruments, and of three self-potential curves of the formation being investigated. Upon obtaining these data, the direction and magnitude



of the formation dip can be determined easily with the aid of computing apparatus developed by Schlumberger.

The following figures briefly outline the operations involved in a Dipmeter Survey:

Schlumberger Multi-shot Photoclinometer Record

This record, which is obtained at the same time the Dipmeter is lowered into the hole, registers the drift angle of the hole, direction of drift, and orientation of the dipmeter instrument.

Schlumberger Dipmeter Record

The Dipmeter is an adaptation of Schlumberger electrical logging. A self-potential curve is recorded on each of three electrodes spaced 120° apart in a plane perpendicular to the axis of the hole. The shift in depth, as revealed by the three curves, may be translated into dip value.

Schlumberger Dip Computing Instrument

The Dip Computing Instrument is a mechanical device whereby formation dip and direction may be quickly determined by using data from the Dipmeter and Photoclinometer without lengthy mathematical calculations.

SCHLUMBERGER WELL SURVEYING CORP.

HOUSTON, TEXAS

HERE'S HOW YOU STRAIGHTEN BENT KELLYS

. . . on the rig and faster!

TIMESAVER
quick and simple to set up

STRAIGHTENS
Kelly while suspended — fast

LIGHTWEIGHT
easy to handle — only 445 lbs.

LARGE CAPACITY
handles up to 12" pipe

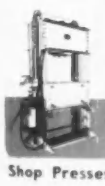
VERSATILE
used for jacking and odd pressing jobs.

RODGERS *Portable Hydraulic* KELLY AND PIPE STRAIGHTENER

Why waste time and labor dragging a Kelly or Stem around to be straightened when you can get them back in "drill-shape" with a Rodgers. A suspended Kelly is easier to straighten — and the Rodgers Straightener slips around it so simply—without breaking the tool string—does the job so quickly and effortless that you're ready to go, pronto!

The Rodgers Straightener is versatile too . . . it handles pipe up to 12" dia. and can be used with rods or cross members inserted in the bottom frame, for odd pressing or pulling jobs. The cylinder capacity is 100 tons. It may be quickly removed from the frame and used as a portable jack in any position required. The frame is strong and lightweight; the hydraulic hand pump has 4 speeds, is portable—weight 75 lbs. Spacers on frame allow cylinder adjustment for varied requirements.

Send for a Rodgers Catalog and complete details — Today!



Rodgers Hydraulic, Inc.

hydraulic power equipment

Shop Presses

Crawler-Track Presses

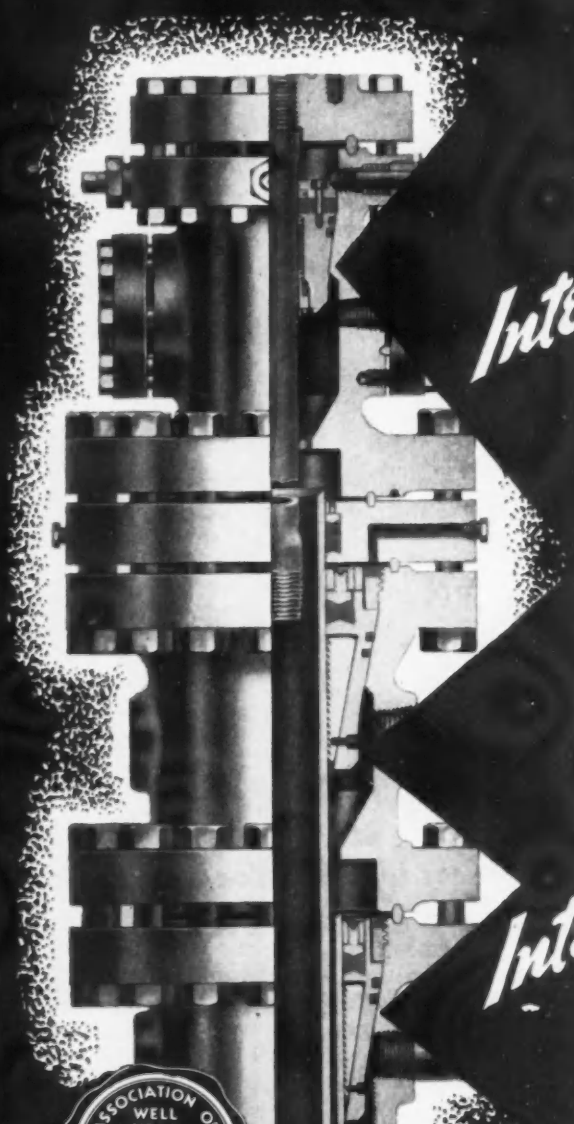
Portable Presses

7441 Walker St., St. Louis Park, Minneapolis 16, Minn.

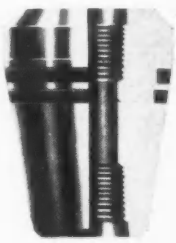
Power Pump Units

McEVOY CASING and TUBING HANGERS Permit any type of Completion.

New



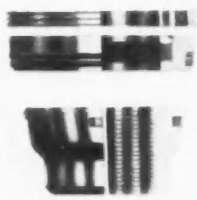
Interchangeable **TUBING HANGERS**



ALB

Threaded mandrel hanger for use where completion methods do not require a specialized hanger.

Interchangeable **CASING HANGERS**



LHCS-1

Affords a non-welded seal for utmost safety. Slips may be locked together and landed through preventers if desired. This hanger is highly desirable where N-80 pipe is being set, due to difficulty of obtaining a satisfactory weld on this class of pipe.

ASSOCIATION OF WELL HEAD EQUIPMENT MANUFACTURERS — CERTIFIED

McEVOY STANDARDS *mean* *Safe, Trouble-Free Installations*

McEvoy Standards are the result of:

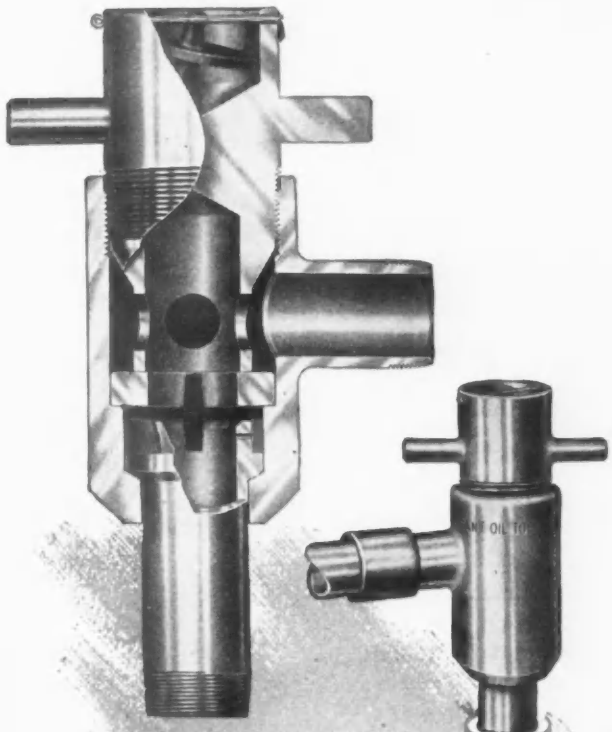
RESEARCH: McEvoy is continually active in field and laboratory, studying the changing requirements of the oil industry and developing new equipment to keep pace with those requirements.

ENGINEERING: McEvoy products are engineered from the user's standpoint. That's the reason for the adaptability, flexibility, and satisfactory performance of McEvoy equipment in the field.

MANUFACTURING: McEvoy has completely modernized its manufacturing facilities and will continue to add new and improved equipment as it becomes available.

INSPECTION: McEvoy exercises complete chemical and physical control over raw materials and heat treatment All McEvoy products are subjected to rigid final inspection and test

McEVOY PRODUCTS meet A. P. I. standards and the standards of the Association of Well Head Equipment Manufacturers. Satisfactory field service is further assured by the addition of McEvoy standards.



Safety AUTOMATIC PRESSURE RELEASE

SAFETY FOR THE CREW —PROTECTION FOR THE PUMPS AND MUD LINES

The improved GRANT Safety Automatic Pressure Release allows the instantaneous release of excessive pressure, assuring safety for the crew from dangerous "blowouts" and protection for the pumps and mud lines.

Maximum pressure release is controlled by the size of the hole in the pressure release bushing, and can only be changed by changing the bushing itself. Upkeep is extremely low for there are no parts to wear out or deteriorate.

When excessive pressure is released the composition pressure release disc breaks into many small pieces which are washed out through the by-pass line. Since this disc is completely contained within the body there is no hazard from flying parts. Note, also, the bosses or cones on each side of the composition disc. This feature prevents the accidental installation of two or more discs at a time—a further valuable safety feature.

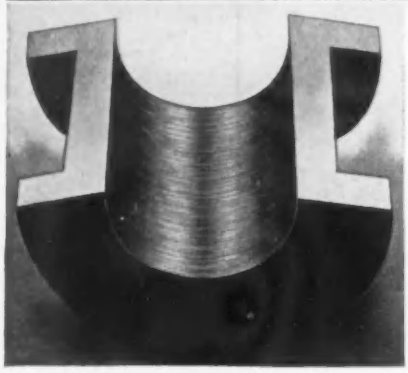
GRANT

OIL TOOL COMPANY

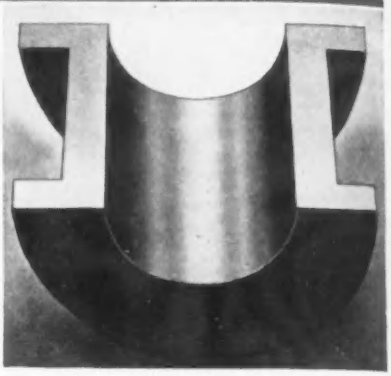
2042 EAST VERNON AVENUE
LOS ANGELES 11, CALIFORNIA

BRANCHES: Avenal, Bakersfield, Santa Maria, Ventura, California; Odessa, Texas

Comparative tests *prove* the Superiority of BRONZOID in solving bearing problems



These bearings were given the same high-speed operating tests without any lubrication whatsoever.



A regular bearing ...SCORED and WARPED

The above bearing produced from bronze containing regular lead was badly scored and so badly warped that the metal squeezed out.

A BRONZOID bearing ...SMOOTH and TRUE

The high lead bronze bearing shown above, containing BRONZOID treated lead, was run one hour and 25 minutes longer than the other bearing, yet was not scored or warped, and lost none of its resilience.

Also call OIL CITY for:
BRASS, BRONZE, and ALUMINUM CASTINGS
Supplied rough, rough machined, or completely machined to your specifications.

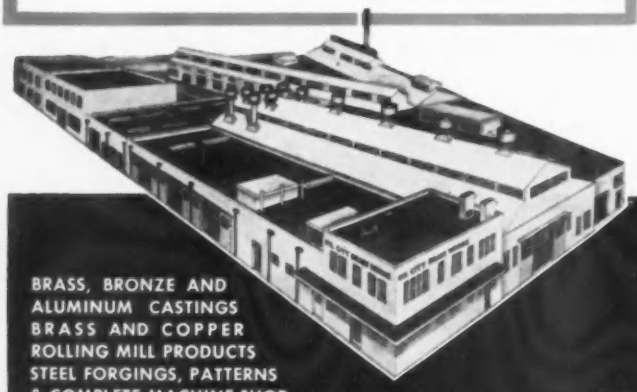
TEST AFTER TEST THROUGH THE YEARS

for leading manufacturers showed similar results – the scoring of shaft and bearing in each case except where BRONZOID was used.

* * *

Solve your bearing problems as so many other leading manufacturers have done . . . by specifying BRONZOID.

To prove superiority, OIL CITY will run comparative tests free of charge. Write, wire or phone NOW.



BRASS, BRONZE AND ALUMINUM CASTINGS
BRASS AND COPPER ROLLING MILL PRODUCTS
STEEL FORGINGS, PATTERNS & COMPLETE MACHINE SHOP SERVICE

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HOUSTON BRANCH: 634 N. EDGEWOOD ST. - L. H. KENNON, *Manager* - Phone WOODCREST 6-1739

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EQUALIZING THIMBLE & ZINC BUTTONS

PEAR-SHAPE LINK & ACCO-LOC SPLICE

TRU-LOC LONG EYE & SHACKLE

U-LOC LOOP & BRAIDED WIRE ROPE

OPEN SOCKET & HOOK

ACCO-LOC LOOP SPLICE

BENT SEAMLESS STEEL TUBING

TRU-LOC ROUND EYE

TRIANGULAR LINK & U-LOC LOOP FOR BRAIDED WIRE ROPE

DOUBLE CLOSED SOCKET & SHACKLE

ACCO-LOC SPLICE & HOOK

ACCO-LOC SPLICE & CHAIN

TRU-LOC OVAL EYE

ACCO-LOC SPLICE & ARMORED LOOP

TRU-LOC CLEVIS

1. Braided wire rope sling . . . ?
2. Cable-laid sling . . . ?
3. Conventional wire rope sling . . . ?
4. Which of the many different terminals . . . ?

LET HAZARD SLING ENGINEERS ADVISE,

a. Build your sling for you

b. Load-test it to twice its rated capacity

c. Register it for its known strength

d. Issue you a Certificate of Test and Registry for absolute safety.

ACCO-Registered Sling Service helps you select the right sling for your particular job—then registers and identifies it for known strength. **All Hazard Slings are made of LAY-SET Preformed wire rope of Improved Plow Steel. Send today for your free copy of "A SLING SERVICE THAT GIVES YOU REGISTERED STRENGTH."**

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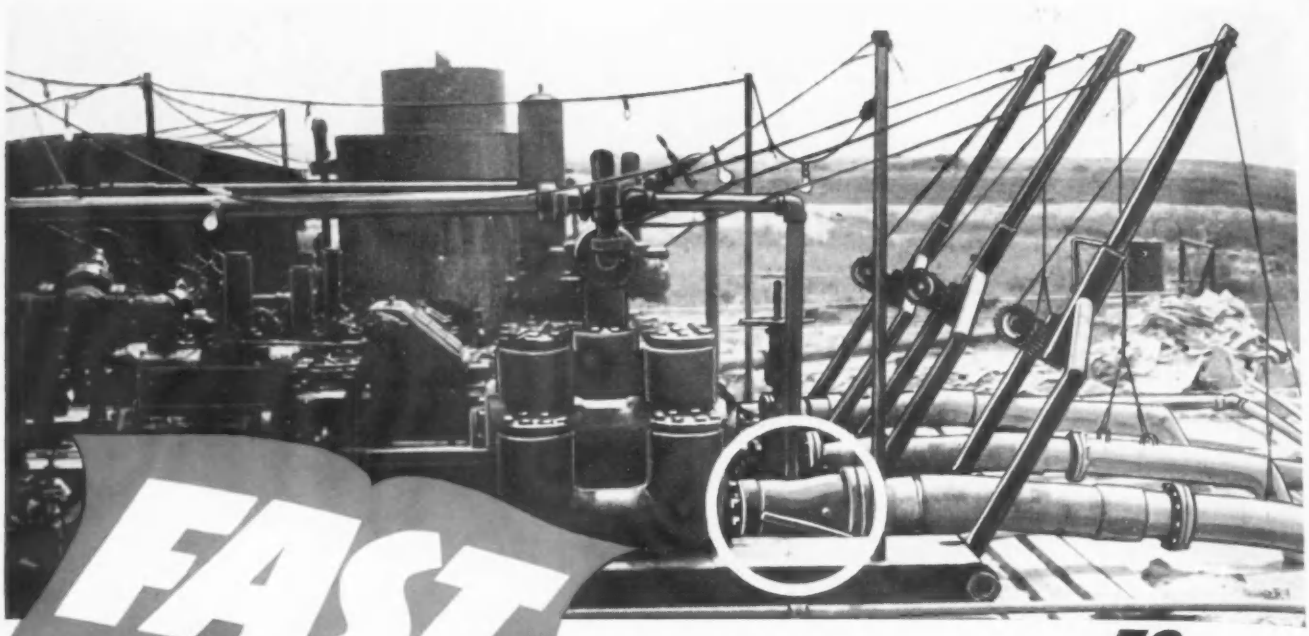
In Business for Your Safety



FAST compounding

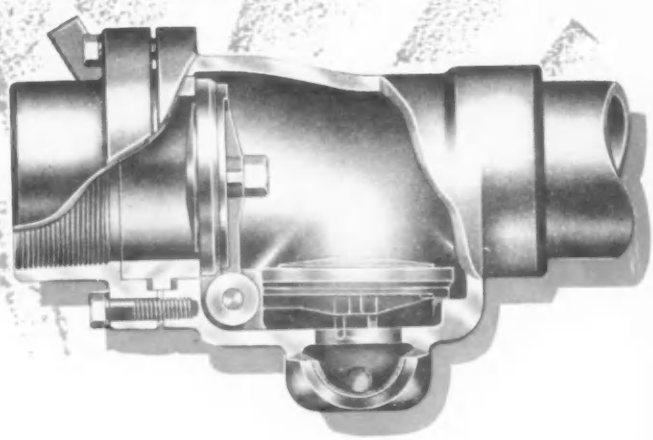
with AMERICAN Slush Pump Compounding Valves!

Photo above also shows "American" Suction Hoists and Sweep Fittings on Gulf Coast Pump Installation!

OPERATION INSTRUCTIONS

Compounding valve is installed on suction line of the pump which is to handle compounding. A line is then connected from discharge of the other pump to the inlet of the compounding valve. This line should have a gate valve conveniently installed in it, as close to the pump as possible.

To compound pumps, shut down pump which does not have compound valve installed on it—close manifold valve on the same pump and open gate valve on line from its discharge to inlet of compound valve. Start up pumps. This sends discharge of the pump into the compound valve, automatically closes suction line to this pump and causes fluid to enter stand pipe at combined pressure of both pumps. Inlet connection on both size valves is 4-inch line pipe.



This "American" compounding valve speeds up the compounding of slush pumps because it opens and closes automatically! Thanks to its simple design and ease of operation, it will last almost a life-time.

AMERICAN IRON & MACHINE WORKS CO. · OKLAHOMA CITY U.S.A. ·

AMERICAN

IRON AND MACHINE WORKS CO.

OKLAHOMA CITY, OKLAHOMA

Office and Warehouse, Houston, Texas; *Export Office:* 420 Lexington Avenue, New York City, N.Y.; *California Representative:* Hopper Machine Works, Inc., Bakersfield, California

Remember, there is an "American" service man in every active field!

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1945 THE OIL WEEKLY 1945

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